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Free-Stream Turbulence and Concave Curvature Effects on Heated, Transitional Boundary Layers

Volume II–Program Listings and Tabulated Data

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ABSTRACT

An experimental investigation of the transition process on flat-plate and concave curved-wall boundary layers for various free-stream turbulence levels was performed. Where possible, sampling according to the intermittency function was made. Such sampling allowed segregation of the signal into two types of behavior--laminar-like and turbulent-like. Results show that for transition on a flat-plate, the two forms of boundary layer behavior, identified as laminar-like and turbulent-like, cannot be thought of as separate Blasius and fully-turbulent profiles, respectively. Thus, simple transition models in which the desired quantity is assumed to be an average, weighted on intermittency, of the theoretical laminar and fully turbulent values is not expected to be successful. Deviation of the flow identified as laminar-like from theoretical laminar behavior is shown to be due to recovery after the passage of a turbulent spot, while deviation of the flow identified as turbulent-like from the fully-turbulent values is thought to be due to incomplete establishment of the fully-turbulent power spectral distribution. Turbulent Prandtl numbers for the transitional flow, computed from measured shear stress, turbulent heat flux and mean velocity and temperature profiles, were less than unity. For the curved-wall case with low free-stream turbulence intensity, the existence of Görtler vortices on the concave wall within both laminar and turbulent flows was established using liquid crystal visualization and spanwise velocity and temperature traverses. Transition was found to occur via a vortex breakdown mode. The vortex wavelength was quite irregular in both the laminar and turbulent flows, but the vortices were stable in time and space. The upwash was found to be more

unstable, with higher levels of u' and u'v', and lower skin friction coefficients and shape factors. Turbulent Prandtl numbers, measured using a triple-wire probe, were found to be near unity for all post-transitional profiles, indicating no gross violation of Reynolds analogy. No evidence of streamwise vortices was seen in the high turbulence intensity case. It is not known whether this is due to the high eddy viscosity over the entire flow which reduces the turbulent Görtler number to stable values and causes the vortices to disappear, or whether it is due to an unstable vortex structure. Predictions based on two-dimensional modelling of the flow over a concave wall with high free-stream turbulence levels, as on the pressure surface of a turbine blade, would seem to be adequate. High levels of free-stream turbulence superimposed on a free-stream velocity gradient (which occurs within curved channels) was found to cause a cross-stream transport of momentum within the "potential core" of the flow. The total pressure within the "potential core" can thus rise to levels higher than that which occurs at the inlet to the test section.

Documentation is presented in two volumes. Volume I contains the text of the report including figures and supporting appendices. Volume II contains data reduction program listings and tabulated data.

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3). TRED_CW: Reduction program for temperature measurements. (p. 200)

4). UVRED_CW: Reduction program for X-wire measurements. (p. 216)

5). K2H01H02: Program for finding empirical constant needed for frequency compensation of cold-wire in triple-wire measurements. (p. 223)

6). VTACQ: Acquisition program for triple-wire measurements. (p. 230)

7). I_VTRED: Reduction program for triple-wire measurements (p. 234)

```
10    !*********************************************************************
20    ! THIS PROGRAM IS USED FOR STANTON NUMBER MEASUREMENTS (STANTON)
30    !*********************************************************************
40    DIM Y(50),Tc(50),Com$[180],Vraw(150),Traw(150),Qconv(150),Qrad(150),Re(15
0),Enth(60)
50    DIM Vwall(150),Qstcond(150),Power1(150),Twall(150),X(150),Stan(150)
60    !*****************************************
70    !
80    ! CONSTANTS
90    !
100   ! HEATER PATCH DATA
110   Rres=2.051                        ! RESISTANCE [OHMS]
120   Area=.8361                        ! HEATER PATCH AREA [m^2]
130   Dxtc=2.54E-2                      ! SPACING BETWEEN THERMOCOUPLES [m]
140   Da=Dxtc*1.                        ! AREA OF 1in BY 1m [m^2]
150   !
160   ! TC CALIBRATION DATA
170   A=.0878053847
180   B=-.6018211152
190   C=1.113528335
200   D=16.14880077
210   !
220   !*****************************************
230   !
240   INPUT "DO YOU WISH TO TAKE NEW DATA OR READ OLD DATA ? (N/O)",Take$
250   IF Take$="O" THEN GOTO 1240
260   !*****************************************
270   !
280   INPUT "INPUT ATMOSPHERIC PRESSURE [in Hg]",Press
290   Press=Press*25.4    ! CONVERT TO mm Hg
300   INPUT "INPUT FREE-STREAM TEMPERATURE [C]",Tatm
310   !*****************************************
320   !
330   INPUT "DO YOU WISH TO 1). INPUT VELOCITY OR 2). MEASURE VELOCITY ? ",Velo$
340   IF Velo$="1" THEN
350     INPUT "INPUT FREE-STREAM VELOCITY [m/S]  !!",Uinf
360     GOTO 560
370   ELSE
380     ! CALCULATE FREE-STREAM VELOCITY
390     INPUT "SET UP PITOT TUBE TO MEASURE DYNAMIC PRESSURE IN FREE-STREAM",Inp
$
400     Slope=.2450
410     Offset=0.
420     Rair=287.                              ! [J/Kg-K]
430     Rho=Press/Rair/(Tatm+273.15)*132.9!  [Kg/m^3]
440     !
450     Ntc=10000
460     Sum0=0.
470     REMOTE 724
480     FOR I=1 TO Ntc
490       ENTER 724;Volt
500       Sum0=Sum0+Volt
510     NEXT I
520     Pdyn=(Slope*(Sum0/Ntc)-Offset)*2.54
530     Uinf=SQR(195.91/Rho*Pdyn)
```

```
540     INPUT "REMOVE PITOT TUBE FROM FLOW !!",Inp$
550   END IF
560   !
570   !****************************************
580   ! COMPUTE HEAT FLUX THROUGH WALL
590   INPUT "INPUT VOLTAGE ACROSS PRECISION RESISTOR [V]",Vres
600   INPUT "INPUT VOLTAGE ACROSS HEATER PATCH [V]",Vpatch
610   Current=Vres/Rres                ! CURRENT THRU HEATER [A]
620   Power=Current*Vpatch             ! HEAT [W]
630   Power=Power/Area*Da              ! HEAT THROUGH DIFFERENTIAL AREA [W]
640   Qflux=Power/Da
650   !
660   !******************************
670   !
680   ! ACQUIRE THERMOCOUPLE DATA
690   !
700   ! READ IN RAW VOLTAGES
710   INPUT "CONNECT TC'S 1 TO 150 !!",Inp$
720   FOR I=1 TO 148
730     Vraw(I)=0.             ! INITIALIZE VOLTAGES
740   NEXT I
750   !
760   REMOTE 703
770   REMOTE 708
780   INPUT "INPUT NUMBER OF AVERAGINGS TO BE MADE !!",Mtc
790   FOR J=1 TO Mtc
800     FOR I=2 TO 148
810       IF I>53 AND I<61 THEN 870
820       OUTPUT 703;I-1;","
830       WAIT 1.2
840       ENTER 708;Volt
850       DISP USING """RUN, THERMOCOUPLE NO., TC VOLTAGE: "",2D,4X,3D,4X,5D.3D"
;J,I,Volt*1000
860       Vraw(I)=Vraw(I)+Volt
870     NEXT I
880   NEXT J
890   DISP " "
900   !
910   FOR I=2 TO 148
920     Vraw(I)=Vraw(I)/Mtc*1000
930   NEXT I
940   !
950   Vraw(1)=-(Vraw(4)-Vraw(2))/2+Vraw(2)
960   Vraw(3)=(Vraw(2)+Vraw(4))/2
970   Vraw(7)=(Vraw(6)+Vraw(8))/2
980   Vraw(14)=(Vraw(13)+Vraw(15))/2
990   Vraw(37)=(Vraw(36)+Vraw(38))/2
1000  Vraw(39)=(Vraw(38)+Vraw(40))/2
1010  Vraw(44)=(Vraw(43)+Vraw(45))/2
1020  Vraw(118)=(Vraw(117)+Vraw(119))/2
1030  Vraw(135)=(Vraw(134)+Vraw(136))/2
1040  Vraw(138)=Vraw(137)
1050  !******************************
1060  !
1070  INPUT "DO YOU WISH TO STORE RAW DATA ? (Y/N)",Store$
```

```
1080  INPUT "INPUT ANY COMMENTS: ",Com$
1090  IF Store$="Y" THEN
1100    INPUT "PLACE DISC IN DRIVE 1",Inp$
1110    INPUT "INPUT NAME OF DATA FILE !!",File$
1120    MASS STORAGE IS ":CS80,700,1"
1130    CREATE BDAT File$,10
1140    ASSIGN @Path TO File$
1150    OUTPUT @Path;Press,Uinf,Power,Qflux
1160    FOR I=1 TO 148
1170      OUTPUT @Path;Vraw(I)
1180    NEXT I
1190    MASS STORAGE IS ":CS80,700,0"
1200  END IF
1210  GOTO 1360
1220  !******************************
1230  !
1240  ! READ DATA
1250  INPUT "PLACE DISC IN DRIVE 1",Inp$
1260  INPUT "INPUT NAME OF DATA FILE !!",File$
1270  MASS STORAGE IS ":CS80,700,1"
1280  ASSIGN @Path TO File$
1290  ENTER @Path;Press,Uinf,Power,Qflux
1300  FOR I=1 TO 148
1310    ENTER @Path;Vraw(I)
1320  NEXT I
1321  !Vraw(19)=(Vraw(18)+Vraw(20))/2
1330  MASS STORAGE IS ":CS80,700,0"
1340  !******************************
1350  !
1360  ! CONVERT VOLTAGES TO TEMPERATURES
1370  !
1380  !  ISOTHERMAL JUNCTIONS
1390  Viso2=(Vraw(145)+Vraw(146))/2
1400  INPUT "DO YOU WISH TO MAKE THE ISOTHERMAL BOX CORRECTION? (Y/N)",Corrbox$
1410  IF Corrbox$="Y" THEN Viso1=Viso2-Vraw(148)
1420  IF Corrbox$="N" THEN Viso1=Viso2
1430  !
1440  !  WALL TEMPERATURES
1450  FOR I=1 TO 138
1460    IF I>100.1 THEN Vwall(I)=Vraw(I)-Viso2
1470    IF I<100.1 THEN Vwall(I)=Vraw(I)-Viso1
1480    Traw(I)=A*Vwall(I)^4+B*Vwall(I)^3+C*Vwall(I)^2+D*Vwall(I)
1490  NEXT I
1500  !
1510  ! FREESTREAM TEMPERATURE
1520  Vinf=Vraw(139)-Viso2
1530  Tinf=A*Vinf^4+B*Vinf^3+C*Vinf^2+D*Vinf
1540  !
1550  ! TEMPERATURE ACROSS INSULATION
1560  Vins1=(Vraw(141)+Vraw(143))/2-Viso2
1570  Tins1=A*Vins1^4+B*Vins1^3+C*Vins1^2+D*Vins1
1580  Vinso=-Vraw(142)-Viso2
1590  Tinso=A*Vinso^4+B*Vinso^3+C*Vinso^2+D*Vinso
1600  !******************************************
1610  !
```

```
1620  ! HEAT FLUX ACROSS INSULATION
1630  !
1640  Kins=.04                                  ! CONDUCTIVITY OF FIBERGLASS [W/m-K]
1650  Dxins=4*2.54/100                          ! THICKNESS OF INSULATION [m]
1660  Qloss=Kins*Da*(Tins1-Tinso)/Dxins         ! POWER LOST THROUGH BACK WALL [W]
1670  !
1680  ! POWER THROUGH FRONT WALL OVER DIFFERENTIAL AREA [W]
1690  Power=Power-Qloss
1700  !*****************************
1710  !
1720  ! CONDUCTION HEAT LOSS
1730  !
1740  !   STREAMWISE CONDUCTION
1750  Klex=.1495                                ! CONDUCTIVITY [W/m-K]
1760  Dxlex=50.14/1000*2.54E-2                  ! THICKNESS OF LEXAN/LC COMP.
1770  FOR I=1 TO 138
1780    Q1=(Traw(I)-Traw(I-1))*Klex*Dxlex/.0254  ! 1 in. SPACING BETWEEN TC'S
1790    Q2=(Traw(I)-Traw(I+1))*Klex*Dxlex/.0254
1800    IF I>52 THEN   ! NEGLECT CROSS-STREAM CONDUCTION FOR CROSS-SPAN TC'S
1810      Q1=0.
1820      Q2=0.
1830    END IF
1840    Qstcond(I)=Q1+Q2
1850    Power1(I)=Power-Q1-Q2                   ! NET POWER THRU FRONT WALL [W]
1860    Twall(I)=Traw(I)-Power1(I)*Dxlex/Klex/Da ! FRONT WALL TEMPERATURE [C]
1870  NEXT I
1880  !
1890  !*****************************
1900  !
1910  ! RADIATION HEAT LOSS [W/m^2]
1920  Sigma=5.67E-8                             ! KELVIN-PLANK CONSTANT [W/m^2-K^4]
1930  Emis=.87                                  ! EMISSIVITY OF LIQUID CRYSTAL
1940  FOR I=1 TO 138
1950    Qrad(I)=Emis*Sigma*Da*((Twall(I)+273.15)^4-(Tinf+273.15)^4)
1960    Qconv(I)=Power1(I)-Qrad(I)
1970  NEXT I
1980  !
1990  !*****************************
2000  !
2010  ! CALCULATE STANTON NUMBER, REx
2020  FOR I=1 TO 138
2030    Tave=(Twall(I)+Tinf)/2
2040    CALL Rhocal(Rho,Tave,Press)
2050    CALL Cpcal(Cp,Tave,Press)
2060    CALL Visccal(Visc,Tave,Press)
2070    Stan(I)=(Qconv(I)/Da)/Rho/Cp/Uinf/(Twall(I)-Tinf)
2080    X(I)=(I-1+1.5)*2.54/100     ! STREAMWISE DISTANCE OF THERMOCOUPLES [cm]
2090    Rex(I)=Uinf*X(I)/Visc
2100  NEXT I
2110  !*****************************
2120  !
2130  ! ENTHALPY THICKNESSES ALONG WALL
2140  CALL Enthcal(Stan(*),Twall(*),Tinf,Enth(*))
2150  !*****************************
2160  !
```

```
2170  ! PRINT RESULTS
2180  INPUT "DO YOU WISH A PRINTOUT OF THE RESULTS ? (Y/N)",Prin$
2190  IF Prin$="N" THEN 2440
2200  INPUT "DO YOU WISH TO PRINT RESULTS ON SCREEN OR PRINTER ? (S/P)",Pr$
2210  IF Pr$="P" THEN
2220    PRINTER IS 701
2230    OUTPUT 701;""
2240    OUTPUT 701;""
2250  END IF
2260  IF Take$="O" THEN PRINT USING """FILENAME: "",10A,2/";File$
2270  PRINT USING """Uinf: "",2D.2D,"" [m/s]""";Uinf
2280  PRINT USING """HEAT FLUX TO HEATER:  "",3D.D,"" [W/m^2]    """;Qflux
2290  PRINT USING """HEAT LOSS THROUGH BACK WALL OVER DA: "",2D.3D,"" [W]""";Qlo
ss
2300  PRINT USING """FREESTREAM TEMPERATURE: "",3D.2D,"" [C]"",/";Tinf
2310  PRINT USING """     Twall [C]         REx           Enth [m]      Qconv [W
/m^2]        St"",/"
2320  FOR I=1 TO 138
2330    IF I>53 AND I<61 THEN 2390
2340    IF INT(I/10)=I/10 AND I<54 THEN PRINT
2350    IF I=61 OR I=71 OR I=87 OR I=103 OR I=119 OR I=129 THEN PRINT USING "/,"
"**************CROSS-SPAN DATA**************"",/"
2360    IF I<53 THEN PRINT USING "3D,5X,2D.2D,7X,SD.3DESZ,7X,SD.3DESZ,7X,SD.3DES
Z,7X,SD.3DESZ";I,Twall(I),Rex(I),Enth(I),Qconv(I)/Da,Stan(I)
2370    IF I>53 THEN PRINT USING "3D,5X,2D.2D,7X,9A,7X,8A,7X,SD.3DESZ,7X,SD.3DES
Z";I,Twall(I),"---------"," ------ ",Qconv(I)/Da,Stan(I)
2380    IF I=138 THEN PRINT USING "/,""****************************************
****"""
2390  NEXT I
2400 !PRINT USING "/,""HEAT TRANSFERRED TO FLUID ALONG CENTERLINE:  "",D.3DESZ,"
" [W]""";Qadded
2410  PRINTER IS 1
2420  !*****************************************
2430  !
2440  ! GRAPH DATA
2450  !
2460  INPUT "DO YOU WISH A PLOT OF St ALONG THE CENTERLINE ? (Y/N)",Cent$
2470  IF Cent$="Y" THEN
2480    FOR I=1 TO 150
2490      IF I>53 THEN X(I)=100
2500    NEXT I
2510    CALL Plot_log(53,Rex(*),Stan(*),"ST/Cf",1.E+4,1.E+7,1,5,1.E-4,1.E-2,1.E-
1,2,"Rex","St/Cf",Uinf,1)
2520  END IF
2530  !
2540  INPUT "DO YOU WISH TO PLOT THE SPANWISE St VARIATION ? (Y/N)",Spanw$
2550  IF Spanw$="Y" THEN
2560    CALL Cr_span(78,Rex(*),Stan(*),"Cross-span St",0,60,2,5,-12,12,1,4,"X [i
n.]","Z [in.]",1)
2570  END IF
2580  !
2590  INPUT "DO YOU WISH A PLOT OF ENTHALPY THICKNESS ALONG THE WALL ? (Y/N)",Pe
nth$
2600  DIM Xloc(60)
2610  FOR I=1 TO 60
```

```
2620    Xloc(I)=(I+.5)*2.54    ! [cm]
2630  NEXT I
2640  IF Penth$="Y" THEN
2650    CALL Plot_lin(52,Xloc(*),Enth(*),"ENTHALPY THICKNESS",0,160,10,2,0,5,.2,
5,"X [cm]","Enth [mm]",1)
2660  END IF
2670  !****************************************
2680  !
2690  END
2700  !*************************************************************************
2710  !
2720  !
2730  !*************************************************************************
2740  sub Rhocal(Rho,Temp,Press)
2750    !
2760    Rho0=1.1766                                    ! DENSITY @ P=1 ATM, T=300 K
2770    Rho=Rho0*(Press/760)*(300/(Temp+273.15)) ! TEMP. AND PRESS. CORRECTION
2780  !
2790  SUBEND
2800  !*************************************************************************
2810  !
2820  !
2830  !*************************************************************************
2840  sub Cpcal(Cp,Temp,Press)
2850    !
2860    Cp=.053*(Temp+273.15)+988.572
2870  !
2880  SUBEND
2890  !*************************************************************************
2900  !
2910  !
2920  !*************************************************************************
2930  SUB Plot_log(N,Xplot(*),Yplot(*),Title$,Xmin,Xmax,Xtic,Nxtic,Ymin,Ymax,Yti
c,Nytic,Labelx$,Labely$,Ufree,Special)
2940  !*********************************
2950    OPTION BASE 1
2960    DIM Xd(200),Yd(200)
2970    GRAPHICS ON
2980    GCLEAR
2990    GINIT
3000    LORG 5
3010    DEG
3020    !*********************************
3030    Nc=1
3040    Data1$="1"
3050  !*********************************
3060  ! LABELS
3070    LDIR 0
3080    CSIZE 6
3090    LORG 5
3100    FOR I=-.1 TO .3 STEP .1
3110      MOVE 70+I,95
3120      LABEL Title$
3130    NEXT I
3140    CSIZE 5
```

```
3150    LORG 5
3160    MOVE 69,5
3170    LABEL Label×$
3180    LDIR 90
3190    MOVE 6,52
3200    LABEL Label$
3210    VIEWPORT 15,124,12,90
3220  !*****************************
3230  ! LOG-LOG AXES
3240    WINDOW LGT(Xmin),LGT(Xmax),LGT(Ymin),LGT(Ymax)
3250    AXES 1,1,LGT(Xmin),LGT(Ymin),1,1,6
3260    AXES 1,1,LGT(Xmax),LGT(Ymax),1,1,0
3270    CLIP OFF
3280    LDIR 0
3290    CSIZE 3.5,.6
3300    Ylab=LGT(Ymin)-.05
3310    FOR I=1 TO LGT(Xmax/Xmin)+1
3320      IF I=1 THEN Xlab=Xmin/10
3330      Xlab=Xlab*10
3340      FOR J=1 TO 9
3350        MOVE LGT(Xlab*J),LGT(Ymin)
3360        DRAW LGT(Xlab*J),LGT(1.1*Ymin)
3370      NEXT J
3380      MOVE LGT(Xlab),Ylab
3390      LORG 6
3400      IF I=1 THEN LORG 3
3410      LABEL USING "DE";Xlab
3420    NEXT I
3430    Xlab=LGT(Xmin)-.05
3440    LDIR 90
3450    FOR I=1 TO LGT(Ymax/Ymin)+1
3460      IF I=1 THEN Ylab=Ymin/10
3470      Ylab=Ylab*10
3480      FOR J=1 TO 9
3490        MOVE LGT(Xmin),LGT(Ylab*J)
3500        DRAW LGT(Xmin*1.1),LGT(Ylab*J)
3510      NEXT J
3520      MOVE Xlab,LGT(Ylab)
3530      LORG 4
3540      IF I=1 THEN LORG 1
3550      LABEL USING "DE";Ylab
3560    NEXT I
3570    !
3580    ! DRAW LAMINAR CORRELATION
3590    MOVE LGT(1.E+4),LGT(.453*.7^(-2/3)*(1.E+4)^(-.5))
3600    DRAW LGT(2.E+6),LGT(.453*.7^(-2/3)*(2.E+6)^(-.5))
3610    MOVE LGT(1.E+5),LGT(4.E-3)
3620    LORG 2
3630    LDIR 0
3640    CSIZE 4,.6
3650   !LABEL "St=0.453*Pr^(-2/3)*Rex^(-.5)"
3660    MOVE LGT(9.E+4),LGT(4.E-3)
3670  ! DRAW LGT(8.E+4),LGT(4.E-3)
3680    MOVE LGT(8.E+4),LGT(4.E-3)
3690  ! DRAW LGT(5.E+4),LGT(.453*.7^(-2/3)*(5.E+4)^(-.5))
```

```
3700    !
3710    MOVE LGT(1.E+4),LGT(.332*1.E+4^(-.5))
3720    DRAW LGT(2.E+6),LGT(.332*2.E+6^(-.5))
3730    MOVE LGT(1.5E+6),LGT(.332*1.5E+6^(-.5))
3740    L1=-3.57
3750    DRAW 6,L1
3760    MOVE 6,L1
3770    DRAW 5.5,L1
3780    LORG 8
3790    LABEL "Cf/2=0.332*Rex^(-0.5)"
3800  !PLOT DATA
3810    LORG 5
3820    CSIZE 4,.5
3830    FOR I=4 TO N-3
3840      X=LGT(Xplot(I))
3850      Y=LGT(Yplot(I))
3860      MOVE X,Y
3870      LABEL "+"
3880    NEXT I
3890    LORG 5
3900    MOVE LGT(5.E+4),LGT(.0085)
3910    LABEL "STATION NUMBERS: "          ! STATION NUMBERS CORRESPOND TO CURVED
                                             WALL CONFIGURATION
3920    MOVE LGT(Xplot(4)),LGT(.0085)
3930    LABEL "1"
3940    MOVE LGT(Xplot(12)),LGT(.0085)
3950    LABEL "2"
3960    MOVE LGT(Xplot(24)),LGT(.0085)
3970    LABEL "3"
3980    MOVE LGT(Xplot(34)),LGT(.0085)
3990    LABEL "4"
4000    MOVE LGT(Xplot(44)/2+Xplot(45)/2),LGT(.0085)
4010    LABEL "5"
4020   !MOVE LGT(Xplot(48)/2+Xplot(49)/2),LGT(.0085)
4030   !LABEL "6"
4040    !
4050    INPUT "DO YOU WISH TO PLOT THE TURB. CORR. FOR St AND/OR Cf? (Y/N)",Corr
_plot$
4060    IF Corr_plot$="Y" THEN
4070      INPUT "INPUT Station (>=3), MOMENTUM THICKNESS (m), AND DYN. VISC. (m^
2/S)",Stat,Momen,D_visc
4080      IF Stat=3 THEN Xwall=(21+.5)*2.54/100
4090      IF Stat=4 THEN Xwall=(30+.5)*2.54/100
4100      IF Stat=5 THEN Xwall=(39+.5)*2.54/100
4110      IF Stat=6 THEN Xwall=(48+.5)*2.54/100
4120      Xmin=INT(Xwall*100/2.54)-10
4130      Xmax=100
4140      Xvo=Xwall-((Momen*Ufree^.202)/(.036*D_visc^.2))^1.25  ! VIRTUAL ORIGIN
4150      !
4160      INPUT "Cf CORRELATION ? (Y/N)",Plot_cf$
4170      IF Plot_cf$="Y" THEN
4180        FOR Dist=Xmin TO Xmax
4190          Distp=Dist*2.54/100                ! DISTANCE FROM LEADING EDGE [m]
4200          Cf2=.0287*(Ufree*(Distp-Xvo)/D_visc)^(-.2)
4210          MOVE LGT(Distp*Ufree/D_visc),LGT(Cf2)
```

```
4220          Cf2plus=.0287*(Ufree*(Distp+1*2.54/100-Xvo)/D_visc)^(-.2)
4230          DRAW LGT((Distp+1*2.54/100)*Ufree/D_visc),LGT(Cf2plus)
4240        NEXT Dist
4250      END IF
4260      !
4270      INPUT "St CORRELATION ? (Y/N)",Plot_st$
4280      IF Plot_st$="Y" THEN
4290        INPUT "INPUT PRANDTL NUMBER",Prandtl
4300        FOR Dist=Xmin TO Xmax
4310          Distp=Dist*2.54/100
4320          Stan=.03*Prandtl^(-.4)*(Ufree*(Distp-Xvo)/D_visc)^(-.2)
4330          MOVE LGT(Distp*Ufree/D_visc),LGT(Stan)
4340          Stanp=.03*Prandtl^(-.4)*(Ufree*(Distp+1*2.54/100-Xvo)/D_visc)^(-.2
)
4350          DRAW LGT((Distp+1*2.54/100)*Ufree/D_visc),LGT(Stanp)
4360        NEXT Dist
4370      END IF
4380    END IF
4390    !
4400    INPUT "DO YOU WISH TO PLOT Cf VALUES? (Y/N)",Cfvals$
4410    IF Cfvals$="Y" THEN
4420      INPUT "INPUT THE NUMBER OF Cf VALUES YOU WISH TO PLOT",Ncfval
4430      FOR I=1 TO Ncfval
4440        LORG 5
4450        CSIZE 5
4460        INPUT "INPUT Cf,ReX",Cfval,Rexval
4470        MOVE LGT(Rexval),LGT(Cfval/2)
4480        LABEL "*"
4490      NEXT I
4500    END IF
4510  !*********************************
4520    INPUT "DO YOU WISH A HARD COPY? (Y/N)",Copy$
4530    IF Copy$="Y" THEN
4540      INPUT "DO YOU WISH AN EXPANDED PLOT ? (Y/N)",Expan$
4550      IF Expan$="Y" THEN
4560        DUMP DEVICE IS 701,EXPANDED
4570        DUMP GRAPHICS
4580      ELSE
4590        DUMP GRAPHICS ! TO #701
4600      END IF
4610    END IF
4620  !*********************************
4630    GCLEAR
4640  !
4650  SUBEND
4660  !*****************************************************************************
4670  !
4680  !
4690  !*****************************************************************************
4700  sub Visccal(Visc,Tave,Press)
4710    !
4720    Visc=9.3277E-8*(Tave+273.15)-1.2248E-5
4730    Visc=Visc*(760/Press)
4740  !
4750  SUBEND
```

```
4760  !*************************************************************************
4770  !
4780  !
4790  !*************************************************************************
4800  sub Enthcal(Stan(*),Twall(*),Tinf,Enth(*))
4810    DIM Q(60),P(60),R(60),A(60),B(60)
4820    !
4830    Deltax=2.54E-2            ! DISTANCE BETWEEN THERMOCOUPLES
4840    !
4850    Enth(0)=0.
4860    FOR I=1 TO 52
4870      !
4880      ! CALCULATE SLOPE OF Diw/Dx
4890      Slope=((Twall(I+1)-Twall(I))/Deltax+(Twall(I)-Twall(I-1))/Deltax)/2
4900      IF I=1 THEN Slope=(Twall(1)+Twall(2))/Deltax
4910      A(I)=Slope/(Twall(I)-Tinf)
4920      B(I)=(Stan(I)+Stan(I-1))/2
4930      P(I)=1+Deltax/2*A(I)
4940      Q(I)=2-P(I)
4950      R(I)=B(I)*Deltax
4960      Enth(I)=Q(I)/P(I)*Enth(I-1)+R(I)/P(I)
4970      !  PRINT I,Q(I)/P(I)*Enth(I-1),R(I)/P(I),Enth(I)
4980    NEXT I
4990    !**************************
5000  SUBEND
5010    !*************************************************************************
5020  SUB Plot_lin(M,Xplot(*),Yplot(*),Title$,Xmin,Xmax,Xtic,Nxtic,Ymin,Ymax,Yti
c,Nytic,Labelx$,Labely$,Sp)
5030    !
5040    OPTION BASE 1
5050    GRAPHICS ON
5060    GCLEAR
5070    GINIT
5080    LORG 5
5090    DEG
5100    !*************************************************************************
**
5110    Lab$="Y" ! WANT LABEL
5120    Nc=1 ! NUMBER OF CURVES DO YOU WISH TO PLOT
5130    A$="Y" ! INPUT THE DATA BY HAND?
5140    Con$="N" ! CONNECT POINTS?
5150    Grid$="N" ! GRID?
5160    Data1$="1" ! LABEL DATA AS 1). CROSSES, 2). SQUARES, OR 3). TRIANGLES ?
5170  !*************************************************************************
5180  ! LABELS
5190    LDIR 0
5200    CSIZE 6
5210    LORG 5
5220    FOR I=-.1 TO .3 STEP .1
5230      MOVE 70+I,95
5240      LABEL Title$
5250    NEXT I
5260    CSIZE 5
5270    LORG 5
5280    MOVE 69,5
```

```
5290    LABEL Labelx$
5300    LDIR 90
5310    MOVE 6,52
5320    LABEL Labely$
5330    VIEWPORT 15,124,12,90
5340  !*********************************************************
5350  ! LINEAR-LINEAR AXES
5360    WINDOW Xmin,Xmax,Ymin,Ymax
5370    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
5380    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
5390    IF Grid$="Y" THEN GRID Nxtic*Xtic,Nytic*Ytic,Xmax,Ymax
5400  !
5410    CLIP OFF
5420    LDIR 0
5430    Ylab=(Ymax-Ymin)/20
5440    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)
5450      X1=I*Xtic*Nxtic+Xmin
5460      MOVE X1,Ymin
5470      LORG 6
5480      LABEL X1
5490    NEXT I
5500    !
5510    Xlab=(Xmax-Xmin)/25
5520    LDIR 90
5530    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
5540      Y1=I*Ytic*Nytic+Ymin
5550      MOVE -Xlab+Xmin,Y1
5560      IF ABS(Y1)<1.E-10 THEN GOTO 5580
5570      LABEL Y1
5580      IF ABS(Y1)<1.E-10 THEN LABEL "0"
5590    NEXT I
5600    LDIR 0
5610  !*************************************************************************
5620  ! PLOT DATA ENTERED MANUALLY
5630    CLIP ON
5640    LORG 5
5650    CSIZE 4,.5
5660    FOR I=1 TO M
5670      IF Sp=1 THEN
5680        Yplot(I)=Yplot(I)*1000
5690      END IF
5700      MOVE Xplot(I),Yplot(I)
5710      LABEL "+"
5720    NEXT I
5730    IF Sp=1 THEN
5740      LORG 2
5750      CSIZE 4.5,.5
5760      MOVE 20,4
5770      LABEL "+ -- Wall Measurements"
5780      MOVE 20,3.6
5790      LABEL "  -- Profile Measurements"
5800      !
5810      LORG 5
5820      CSIZE 3.5
5821      !
```

```
5822      MOVE 4.*2.54,4.8      ! CURVED WALL DATA
5823      LABEL "1"
5824      MOVE 14.5*2.54,4.8
5825      LABEL "2"
5826      MOVE 24*2.54,4.8
5827      LABEL "3"
5828      MOVE 34.5*2.54,4.8
5829      LABEL "4"
5830      MOVE 44.5*2.54,4.8
5831      LABEL "5"
5833      FOR I=1 TO 6
5840        MOVE ((I-1)*9+4)*2.54,4.8
5850        ! LABEL I
5860      NEXT I
5870    END IF
5880  !*************************************************************************
5890    INPUT "DO YOU WISH A HARD COPY? (Y OR N)",A$
5900    IF A$="N" THEN 5980
5910    INPUT "DO YOU WISH AN EXPANDED VERSION ? (Y/N)",Expanded$
5920    IF Expanded$="Y" THEN
5930      DUMP DEVICE IS 701,EXPANDED
5940      DUMP GRAPHICS
5950    END IF
5960    IF Expanded$="N" THEN DUMP GRAPHICS ! TO #701
5970    OUTPUT 701;"
                   "
5980    GCLEAR
5990  SUBEND
6000  !*************************************************************************
6010  !
6020  !
6030  !*************************************************************************
6040  SUB Cr_span(M,Xplot(*),Yplot(*),Title$,Xmin,Xmax,Xtic,Nxtic,Ymin,Ymax,Ytic
,Nytic,Labelx$,Labely$,Sp)
6050    DIM Yspan(50)
6060    !
6070  ! OPTION BASE 1
6080    GRAPHICS ON
6090    GCLEAR
6100    GINIT
6110    LORG 5
6120    DEG
6130    !*************************************************************************
**
6140    Lab$="Y" ! WANT LABEL
6150    Nc=1 ! NUMBER OF CURVES DO YOU WISH TO PLOT
6160    A$="Y" ! INPUT THE DATA BY HAND?
6170    Con$="N" ! CONNECT POINTS?
6180    Grid$="N" ! GRID?
6190    Data1$="1" ! LABEL DATA AS 1). CROSSES, 2). SQUARES, OR 3). TRIANGLES ?
6200  !*************************************************************************
6210  ! LABELS
6220    LDIR 0
6230    CSIZE 6
6240    LORG 5
```

```
6250    FOR I=-.1 TO .3 STEP .1
6260      MOVE 70+I,95
6270      LABEL Title$
6280    NEXT I
6290    CSIZE 5
6300    LORG 5
6310    MOVE 69,5
6320    LABEL Labelx$
6330    LDIR 90
6340    MOVE 6,52
6350    LABEL Labely$
6360    VIEWPORT 15,124,12,90
6370  !*************************************************************
6380  ! LINEAR-LINEAR AXES
6390    WINDOW Xmin,Xmax,Ymin,Ymax
6400    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
6410    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
6420    IF Grid$="Y" THEN GRID Nxtic*Xtic,Nytic*Ytic,Xmax,Ymax
6430  !
6440    CLIP OFF
6450    LDIR 0
6460    Ylab=(Ymax-Ymin)/20
6470    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)
6480      X1=I*Xtic*Nxtic+Xmin
6490      MOVE X1,Ymin
6500      LORG 6
6510      LABEL X1
6520    NEXT I
6530    !
6540    Xlab=(Xmax-Xmin)/25
6550    LDIR 90
6560    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
6570      Y1=I*Ytic*Nytic+Ymin
6580      MOVE -Xlab+Xmin,Y1
6590      IF ABS(Y1)<1.E-10 THEN GOTO 6610
6600      LABEL Y1
6610      IF ABS(Y1)<1.E-10 THEN LABEL "0"
6620    NEXT I
6630    LDIR 0
6640  !*************************************************************
6650  ! PLOT DATA ENTERED MANUALLY
6660    CLIP ON
6670    LORG 5
6680    CSIZE 4,.5
6690    !
6691    Yplot(79)=0.
6692    Yplot(63)=0.
6693    Yplot(99)=0.
6700    FOR Sta=1 TO 6
6710      Xspan=(Sta-1)*9+4
6720      MOVE Xspan,-12
6730      DRAW Xspan,12
6740      !
6750      IF Sta>1.1 AND Sta<4.8 THEN GOTO 7030
6760      Npts=11
```

```
6770      Yspan(1)=10
6780      Yspan(2)=8
6790      Yspan(3)=6
6800      Yspan(4)=4
6810      Yspan(5)=2
6820      Yspan(6)=-2
6830      Yspan(7)=-4
6840      Yspan(8)=-6
6850      Yspan(9)=-8
6860      Yspan(10)=-10
6870      Yspan(11)=0.
6880        !
6890      FOR I=1 TO 10
6900        IF Sta=1 THEN Xplot(I)=Xspan+Yplot(I+50)*1000
6910        IF Sta=5 THEN Xplot(I)=Xspan+Yplot(I+118)*1000
6920        IF Sta=6 THEN Xplot(I)=Xspan+Yplot(I+128)*1000
6930      NEXT I
6940      Xplot(11)=Xspan+Yplot(Xspan)*1000
6950        !
6960      FOR I=1 TO 11
6970        MOVE Xspan,Yspan(I)
6980        DRAW Xplot(I),Yspan(I)
6990        LABEL "+"
7000      NEXT I
7010      GOTO 7330
7020      !
7030      Npts=17
7040      Yspan(1)=10
7050      Yspan(2)=8
7060      Yspan(3)=6
7070      Yspan(4)=5
7080      Yspan(5)=4
7090      Yspan(6)=3
7100      Yspan(7)=2
7110      Yspan(8)=1
7120      Yspan(9)=-1
7130      Yspan(10)=-2
7140      Yspan(11)=-3
7150      Yspan(12)=-4
7160      Yspan(13)=-5
7170      Yspan(14)=-6
7180      Yspan(15)=-8
7190      Yspan(16)=-10
7200      Yspan(17)=0
7210      FOR I=1 TO 16
7220        IF Sta=2 THEN Xplot(I)=Xspan+Yplot(I+70)*1000
7230        IF Sta=3 THEN Xplot(I)=Xspan+Yplot(I+86)*1000
7240        IF Sta=4 THEN Xplot(I)=Xspan+Yplot(I+102)*1000
7250      NEXT I
7260      Xplot(17)=Xspan+Yplot(Xspan)*1000
7270        !
7280      FOR I=1 TO 17
7290        MOVE Xspan,Yspan(I)
7300        DRAW Xplot(I),Yspan(I)
7310        LABEL "+"
```

```
7320      NEXT I
7330    NEXT Sta
7340    MOVE 8,10.7
7350    LABEL "St. 1"
7360    MOVE 17,10.7
7370    LABEL "St. 2"
7380    MOVE 26,10.7
7390    LABEL "St. 3"
7400    MOVE 35,10.7
7410    LABEL "St. 4"
7420    MOVE 44,10.7
7430    LABEL "St. 5"
7431    MOVE 53,10.7
7432    LABEL "St. 6"
7440  !*************************************************************************
7450    INPUT "DO YOU WISH A HARD COPY? (Y OR N)",A5$
7460    IF A5$="N" THEN 7540
7470    INPUT "DO YOU WISH AN EXPANDED VERSION ? (Y/N)",Expended$
7480    IF Expended$="Y" THEN
7490      DUMP DEVICE IS 701,EXPANDED
7500      DUMP GRAPHICS
7510    END IF
7520    IF Expended$="N" THEN DUMP GRAPHICS 1 TO #701
7530    OUTPUT 701;"
                   "
7540    GCLEAR
7550  SUBEND
```

```
10    !*************************************************************************
20    ! DATA REDUCTION PROGRAM FOR VELOCITY ON CONCAVE CURVED WALL (VRED_CW)
30    ! THIS PROGRAM PERFORMS THE FOLLOWING:
40    !     1).  CALCULATES Delta1, Delta2, H and Delta from the velocity profile
                 on disc.  Correction for curvature is made.
50    !     2).  CALCULATES and PLOTS U/Uinf vs. Y/Delt1.  Data normalized on
                 local potential velocity (not Upw).
60    !     3).  CALCULATES Cf from Uplus vs. Yplus data.  The Clauser technique
                 is used in the turbulent region.  Uplus vs. Yplus is plotted.
70    !          Data is normalized on local potential velocity (not Upw).
80    !
90    !*************************************************************************
100   !
110   DIM Y(50),U(50),Up(50),Ndnst(50),Ynd(50),Und(50),Uplus(50),Yplus(50)
120   DIM Com$[200]
130   REAL Nstress,H
140   !
150   ! INPUT DATA FROM DISC
160   INPUT "WAS DATA TAKEN USING A PITOT TUBE OR A HOT-WIRE: (P,HW)",Probe$
170   INPUT "READ DATA:  PLACE DISC IN DRIVE 1 AND INPUT NAME OF DATA FILE: ",Fi
le$
180   MASS STORAGE IS ":CS80,700,1"
190   ASSIGN @Readfile TO File$
200   ENTER @Readfile;Com$,Temp,Press,St,M
210   PRINT Com$
220   BEEP
230   FOR J=1 TO M
240     IF Probe$="P" THEN ENTER @Readfile;Y(J),U(J)
250     IF Probe$="HW" THEN ENTER @Readfile;Y(J),U(J),Up(J)
260   NEXT J
262   Y(1)=1.E-8
270   MASS STORAGE IS ":CS80,700,0"
280   !*****************************************
290   !
300   CALL Visco(Visc,Temp,Press)       ! KINEMATIC VISCOSITY [m^2/S]
310   CALL Xst(St,X)                    ! DISTANCE FROM LEADING EDGE [m]
320   !
330   INPUT "DO YOU WISH TO CALCULATE Cf AND U+ vs. Y+ ? (Y/N)",Cfc$
340   IF Cfc$="Y" THEN CALL Skfric(Y(*),U(*),M,Visc,Yeff,Yplus(*),Uplus(*),Cf,Up
w,X)
350   !
360   INPUT "DO YOU WISH TO CALCULATE BOUNDARY LAYER PARAMETERS ? (Y/N)",Bp$
370   IF Bp$="Y" THEN CALL Blp(Probe$,Y(*),U(*),Up(*),Ndnst(*),M,Visc,X,Yeff,Upw
,Del995,Del1,Del2,H,Rex,Redel1,Redel2,Ynd(*),Und(*),M)
380   !
390   CALL Dataprint(Probe$,M,File$,St,X,Cf,Upw,Visc,Del995,Del1,Del2,H,Rex,Rede
l1,Redel2,Y(*),Yeff,U(*),Ndnst(*),Yplus(*),Uplus(*),Ynd(*),Und(*))
400   !
410   INPUT "DO YOU WISH A PLOT OF THE DATA ? (Y/N)",Plotd$
420   IF Plotd$="Y" THEN PRINT
430   IF Plotd$="Y" THEN CALL Dataplot(Probe$,M,Ndnst(*),Ynd(*),Und(*))
440   END
450   !*************************************************************************
460   !
470   !
```

```
480   !*************************************************************************
490   !
500   SUB Visco(Visc,Temp,Press)
510   !
520     Visc=9.3277E-8*(Temp+273.15)-1.2248E-5  ! VISCOSITY AT 1 ATM (760 TORR)
530     Visc=Visc*(760/Press)
540   SUBEND
550   !
560   !*************************************************************************
570   !
580   !
590   !*************************************************************************
600   !
610   SUB Xst(St,X)
620     IF St=1 THEN X=3.5*2.54/100
630     IF St=2 THEN X=14.0*2.54/100
640     IF St=3 THEN X=24.0*2.54/100
650     IF St=4 THEN X=34.5*2.54/100
660     IF St=5 THEN X=44.5*2.54/100
670   SUBEND
680   !
690   !*************************************************************************
700   !
710   !
720   !*************************************************************************
730   !
740   SUB Skfric(Y(*),U(*),Mp,Visc,Yeff,Yplus(*),Uplus(*),Cf,Upw,X)
750   !
760   !*******************************************************
770     OPTION BASE 1
780     DIM Yn(50)
790     INPUT "LAMINAR OR TURBULENT CORRELATION ? (L/T)",B3$
800     Flag=0
810   !*******************************************************
820   !
830   ! CALCULATION OF Upw:
840     Radius=97                   ! WALL CURVATURE [m]
850     Vel_const=(U(Mp)*(Radius-Y(Mp))+U(Mp-1)*(Radius-Y(Mp-1)))/2
860     Upw=Vel_const/Radius        ! POTENTIAL VELOCITY AT WALL [m/S]
870   !
880   !*******************************************************
890   ! REDUCE DATA TO U+ AND Y+ COORDINATES.
900     INPUT "HOW MANY DATA POINTS DO YOU WISH TO TAKE OUT ? (FROM THE BEGINNIN
6)",Nto
910     INPUT "WHAT DO YOU WISH TO INPUT? A. Cf  B. Yeff",In$
920     IF In$="A" THEN INPUT "INPUT Cf",Cf
930     IF In$="B" THEN INPUT "INPUT Yeff [cm]",Yeff
940     FOR J=1 TO Mp
950       Yn(J)=Y(J)+Yeff
960       IF Yn(J)<=1.E-6 THEN Yn(J)=1.E-40
970       Upot=Vel_const/(Radius-Yn(J))      ! LOCAL POTENTIAL VELOCITY [m/S]
980       Uplus(J)=U(J)/Upot/SQR(Cf/2.)
990       Yplus(J)=Yn(J)*Upot*SQR(Cf/2.)/Visc/100.
1000    NEXT J
1010    Rex=Upw*X/Visc
```

```
1020  !*****************************************
1030  ! PLOTTING OF CURVES
1040    DIM Eta(50),Pe(30)
1050    GRAPHICS ON
1060    GCLEAR
1070    GINIT
1080    CSIZE 4,.5
1090    DEG
1100  !*****************************************
1110  ! DRAW AXES
1120    Xtic=1.
1130    Ytic=5.
1140    Xmax=LGT(3000)
1150    Ymax=60
1160    Xmin=0.
1170    Ymin=0.
1180    Crox=.01*Xmax
1190    Croy=.012*Ymax
1200    Xwin=-(Xmax-Xmin)*.15
1210    Ywin=-(Ymax-Ymin)*.15
1220    WINDOW Xwin,Xmax,Ywin,Ymax
1230    FRAME
1240    AXES Xtic,Ytic,Xmin,Ymin
1250    MOVE .2,Ymax-5
1260    LABEL File$
1270    MOVE .2,Ymax-7.5
1280    LABEL USING """Cf= "",D.2DE";Cf
1290    MOVE .2,Ymax-10.
1300    LABEL USING """Yeff= "",D.4D";Yeff
1310    IF B3$="L" THEN
1320      MOVE .2,Ymax-12.5
1330      LABEL USING """Re-x= "",D.2DE";Rex
1340    END IF
1350    J1=(Ymax-Ymin)/Ytic-1
1360    FOR J=0 TO J1
1370      LORG 1
1380      MOVE (Xwin-Xmin)/3.,5.*J
1390      Yval=5.*J
1400      LABEL USING "2D";Yval
1410    NEXT J
1420    MOVE (Xwin-Xmin)/3.*2,Ymax-5.
1430    Xval=10.
1440    LORG 4
1450    FOR I=1 TO 3
1460      MOVE I,(Ywin-Ymin)/2.
1470      LABEL USING "4D";Xval
1480      Xval=Xval*10.
1490    NEXT I
1500    MOVE Xmax-2.,Ywin+2.
1510    LABEL "Y+"
1520    MOVE -.30,35
1530    CSIZE 4.5,.5
1540    LABEL "U+"
1550  ! DRAW ANALYTIC LINE**********************
1560    MOVE 0,1
```

```
1570    Ia=500
1580    FOR I=1 TO Ia
1590      Yd=49/Ia*I+1
1600      Xd=LGT(Yd)
1610      DRAW Xd,Yd
1620    NEXT I
1630    Ja=500
1640    MOVE LGT(10),2.44*LOG(10)+5.5
1650    Xd=LGT(3000)
1660    Yd=2.44*LOG(3000)+5.5
1670    DRAW Xd,Yd
1680  ! BLASIUS PROFILE**************************
1690    IF B3$="T" THEN GOTO 1860
1700    IF Flag=0 THEN
1710      READ Pe(*)
1720    END IF
1730    DATA 0.,.2655,.5294,.7876,1.0336,1.2596,1.458,1.623,1.7522,1.8466,1.911,
1.9518,1.9756,1.9885,1.995,1.998,1.9992,1.9998,2,2,2,2,2,2,2,2,2,2,2,2
1740    Flag=1
1750    Eta(1)=0.
1760    FOR J=2 TO 30
1770      Eta(J)=Eta(J-1)+.2
1780    NEXT J
1790    FOR J=2 TO 30
1800      Xd=1.1524*Rex^.25*Eta(J)
1810      Yd=.8678*Rex^.25*Pe(J)
1820      IF Xd<20. THEN MOVE LGT(Xd),Yd
1830      Xd=LGT(Xd)
1840      DRAW Xd,Yd
1850    NEXT J
1860  ! VAN DRIEST*****************************
1870    IF B3$="L" THEN 2080
1880    B=1.
1890    Con=1./2.44
1900    Sum=0.
1910    Vanmi=2.
1920    Vanma=50.
1930    M=500.
1940    Yz=0.
1950    Dy=(Vanma-Vanmi)/M
1960    FOR I=1 TO M
1970      Yz=Yz+Dy
1980      A=((Con*Yz)*(1.-EXP(-Yz/26.)))^2
1990      Intgt=B+SQR(B^2+4.*A)
2000      Intgt=(2./Intgt)*Dy
2010      Sum=Sum+Intgt
2020      Xd=LGT(Yz)
2030      Yd=Sum
2040      IF Yz<5 THEN MOVE Xd,Yd
2050      DRAW Xd,Yd
2060    NEXT I
2070  !*********************************************
2080  ! PLOT DATA
2090    LORG 5
2100    FOR J=1 TO Mp
```

```
2110      IF J<=Nto THEN 2160
2120      Ylog=LGT(Yplus(J))
2130      MOVE Ylog,Uplus(J)
2140      CSIZE 6
2150      LABEL "+"
2160    NEXT J
2170  !*****************************************
2180    INPUT "DO YOU WANT A HARD COPY ? (Y/N)",Copy$
2190    IF Copy$="Y" THEN
2200      INPUT "DO YOU WISH EXPANDED MODE ? (Y/N)",Expan$
2210      IF Expan$="Y" THEN
2220        DUMP DEVICE IS 701,EXPANDED
2230        DUMP GRAPHICS
2240        OUTPUT 701;""
2250      ELSE
2260        DUMP DEVICE IS 701
2270        DUMP GRAPHICS
2280        OUTPUT 701;" "
2290      END IF
2300    END IF
2310    INPUT "DO YOU WANT TO TRY AGAIN ? (Y/N)",Try$
2320    IF Try$="Y" THEN 880
2330    GCLEAR
2340  !*****************************************
2350  !
2360  SUBEND
2370  !*************************************************************************
2380  !
2390  !
2400  !*************************************************************************
2410  !
2420  SUB Blp(Probe$,Y(*),U(*),Up(*),Ndnst(*),M,Visc,X,Yeff,Upw,Delta995,Delta1,
Delta2,H,Rex,Redel1,Redel2,Ynd(*),Und(*),Mp)
2430    DIM Q1(51),Q2(51),Xn(50),Yn(50)
2440    !
2450    FOR J=1 TO M
2460      Yn(J)=(Y(J)+Yeff)/100        ! CORRECT Y's AND CONVERT TO METERS
2470      IF Yn(J)<0. THEN Yn(J)=0.
2480    NEXT J
2490    !
2500    ! COMPUTE UPW
2510    Radius=.97                     ! WALL CURVATURE [m]
2520    K=1/Radius
2530    Vel_const=(U(Mp)*(Radius-Yn(Mp))+U(Mp-1)*(Radius-Yn(Mp-1)))/2
2540    Upw=Vel_const/Radius
2550    !
2560    ! CALCULATE BOUNDARY LAYER THICKNESS (Delta995) BY SIMPLE INTERPOLATION
2570    FOR I=1 TO M
2580      Upot=Vel_const/(Radius-Yn(I)) ! COMPUTE LOCAL POTENTIAL VELOCITY
2590      U995=Upot*.995
2600      IF U(I)>U995 THEN
2610        M1=I
2620        GOTO 2650
2630      END IF
2640    NEXT I
```

```
2650    Frac=(U995-U(M1-1))/(U(M1)-U(M1-1))
2660    Delta995=(Frac*(Yn(M1)-Yn(M1-1))+Yn(M1-1))
2670    !
2680    ! CALCULATE NON-DIMENSIONAL VELOCITY (U/Upot)
2690    FOR I=1 TO M
2700      Upot=Vel_const/(Radius-Yn(I))    ! COMPUTE LOCAL POTENTIAL VELOCITY
2710      Und(I)=U(I)/Upot
2720    NEXT I
2730    !
2740    ! CALCULATE NON-DIMENSIONAL TURBULENCE INTENSITY [%]
2750    IF Probe$="HW" THEN
2760      FOR I=1 TO M
2770        Upot=Vel_const/(Radius-Yn(I))  ! COMPUTE LOCAL POTENTIAL VELOCITY
2780        Ndnst(I)=Up(I)/Upot*100        ! CONVERT TO PERCENT
2790      NEXT I
2800    END IF
2810    !
2820    ! CALCULATE DISPLACEMENT/MOMENTUM THICKNESS
2830    Sum1=0.       ! USED IN CALCULATING DISPLACEMENT THICKNESS
2840    Sum2=0.       ! USED IN CALCULATING MOMENTUM THICKNESS
2850    FOR I=1 TO M
2860      Upot=Vel_const/(Radius-Yn(I))    ! COMPUTE LOCAL POTENTIAL VELOCITY
2870      Q1(I)=(Upot-U(I))/Upw            ! INTEGRAND FOR DISPLACEMENT THICKNESS
2880      Q2(I)=U(I)*(Upot-U(I))/Upw/Upw   ! INTEGRAND FOR MOMENTUM THICKNESS
2890    NEXT I
2900    Yn(0)=0.
2910    Q1(0)=1.
2920    Q2(0)=0.
2930    FOR I=0 TO M-2
2940      !
2950      ! CALCULATE COEFFICIENTS A,B,C IN Y=AX^2+BX+C
2960      X1=Yn(I)
2970      X2=Yn(I+1)
2980      X3=Yn(I+2)
2990      Y11=Q1(I)
3000      Y12=Q1(I+1)
3010      Y13=Q1(I+2)
3020      Y21=Q2(I)
3030      Y22=Q2(I+1)
3040      Y23=Q2(I+2)
3050      B1=((Y13-Y12)*(X1^2-X2^2)-(Y11-Y12)*(X3^2-X2^2))/((X3-X2)*(X1^2-X2^2)-
(X1-X2)*(X3^2-X2^2))
3060      B2=((Y23-Y22)*(X1^2-X2^2)-(Y21-Y22)*(X3^2-X2^2))/((X3-X2)*(X1^2-X2^2)-
(X1-X2)*(X3^2-X2^2))
3070      A1=((Y11-Y12)-B1*(X1-X2))/(X1^2-X2^2)
3080      A2=((Y21-Y22)-B2*(X1-X2))/(X1^2-X2^2)
3090      C1=Y11-A1*X1^2-B1*X1
3100      C2=Y21-A2*X1^2-B2*X1
3110      !
3120      ! CALCULATE AREA
3130      Delarea1=A1/3*(X2^3-X1^3)+B1/2*(X2^2-X1^2)+C1*(X2-X1)
3140      Delarea2=A2/3*(X2^3-X1^3)+B2/2*(X2^2-X1^2)+C2*(X2-X1)
3150      IF I=M-2 THEN Delarea1=A1/3*(X3^3-X1^3)+B1/2*(X3^2-X1^2)+C1*(X3-X1)
3160      IF I=M-2 THEN Delarea2=A2/3*(X3^3-X1^3)+B2/2*(X3^2-X1^2)+C2*(X3-X1)
3170      Sum1=Sum1+Delarea1
```

```
3180      Sum2=Sum2+Delarea2
3190    NEXT I
3200    !
3210    Delta1=(1-EXP(-K*Sum1))/K           ! DISPLACEMENT THICKNESS [m]
3220    Delta2=(1-1/(K*Sum2+1))/K           ! MOMENTUM THICKNESS [m]
3230    !
3240    ! NORMALIZE Y-DISTANCES ON WALL CURVATURE
3250    FOR I=1 TO M
3260      Ynd(I)=Yn(I)/Radius
3270    NEXT I
3280    !
3290    ! CALCULATE SHAPE FACTORS, REYNOLDS NUMBERS
3300    H=Delta1/Delta2
3310    !
3320    Rex=Upw*X/Visc
3330    Redel1=Upw*Delta1/Visc
3340    Redel2=Upw*Delta2/Visc
3350  !****************************************
3360  !
3370  SUBEND
3380  !*************************************************************************
3390  !
3400  !
3410  !*************************************************************************
3420  !
3430  SUB Dataprint(Probe$,M,File$,St,X,Cf,Upw,Visc,Del995,Del1,Del2,H,Rex,Redel
1,Redel2,Y(*),Yeff,U(*),Ndnst(*),Yplus(*),Uplus(*),Ynd(*),Und(*))
3440  !
3450  !****************************************
3460    INPUT "PRINT DATA ON SCREEN OR PRINTER ? (S/P)",Pr$
3470    PRINTER IS 1
3480    IF Pr$="P" THEN
3490      INPUT "TURN PRINTER ON",Inp$
3500      PRINTER IS 701
3510      OUTPUT 701;""     ! TURN PERFORATION SKIP ON
3520      OUTPUT 701;""     ! SET PAGE LENGTH
3530      OUTPUT 701;""     ! LINE WRAP MODE
3540    END IF
3550    !
3560    PRINT USING "/,""FILE:  "",10A";File$
3570    PRINT USING "/,""STATION:  "",2D";St
3580    PRINT USING "2/,""XSTA   = "",D.3D,X,""[m]"",15X,""DEL1   = "",D.3DESZ,X
,""[m]""";X,Del1
3590    PRINT USING """Cf     = "",D.3DESZ,16X,""DEL2   = "",D.3DESZ,X,""[m]""";
Cf,Del2
3600    PRINT USING """Upw    = "",2D.2D,X,""[m/S]"",13X,""H      = "",D.3D";Upw
,H
3610    PRINT USING """Visc   = "",D.3DESZ,X,""[m^2/S]"",8X,""REdel1 = "",D.3DES
Z";Visc,Redel1
3620    PRINT USING """REx    = "",D.3DESZ,16X,""REdel2 = "",D.3DESZ";Rex,Redel2
3630    PRINT USING """Del995 = "",D.3DESZ,"" [m]""";Del995
3640    !
3650    IF Probe$="HW" THEN
3660      PRINT USING "2/,6X,""Y [cm]"",3X,""U [m/s]"",12X,""Y+"",7X,""U+"",11X,
""y/R "",7X,""u'/Upw"",/"
```

```
3670    ELSE
3680      PRINT USING "2/,6X,""Y [cm]"",3X,""U [m/s]"",12X,""Y+"",6X,""U+"",12X,
""  y/R "",3X,""U/Upw"",/"
3690    END IF
3700    !
3710    FOR I=1 TO M
3720      IF Probe$="P" THEN
3730        PRINT USING "X,2D,2X,2D.3D,3X,3D.3D,9X,4D.2D,3X,3D.2D,8X,D.5D,3X,D.3
D";I,(Y(I)+Yeff),U(I),Yplus(I),Uplus(I),Ynd(I),Und(I)
3740      ELSE
3750        PRINT USING "X,2D,2X,2D.3D,3X,3D.3D,9X,4D.2D,3X,3D.2D,8X,D.5D,5X,2D.
3D";I,(Y(I)+Yeff),U(I),Yplus(I),Uplus(I),Ynd(I),Ndnst(I)
3760      END IF
3770      IF INT(I/5)=I/5 THEN PRINT
3780    NEXT I
3790    PRINTER IS 1
3800    !************************************
3810    !
3820  SUBEND
3830  !*****************************************************************************
3840  !
3850  !
3860  !*****************************************************************************
3870  SUB Dataplot(Probe$,M,Ndnst(*),Ynd(*),Und(*))
3880  !****************************************
3890    OPTION BASE 1
3900    DIM Xd(500),Yd(500),Title$[50],Labelx$[50],Labely$[50]
3910    GRAPHICS ON
3920    GCLEAR
3930    GINIT
3940    LORG 5
3950    DEG
3960  !****************************************
3970    Xmin=0.         ! MINIMUM VALUE OF X
3980    Xmax=.030
3990    Xtic=.001       ! SMALL SCALE
4000    Nxtic=5         ! HOW MANY SMALL SCALES IN LARGE SCALE
4010    IF Probe$="P" THEN
4020      Title$="Velocity Profile"
4030      Ymin=0.
4040      Ymax=1.2
4050      Ytic=.05
4060      Nytic=4
4070      Labelx$="y/R"
4080      Labely$="U/Upw"
4090    ELSE
4100      Title$="Turbulence Intensity Profile"
4110      Ymin=0.
4120      Ymax=16
4130      Ytic=.5
4140      Nytic=4
4150      Labelx$="y/R"
4160      Labely$="u'/Upw [%]"
4170    END IF
4180    N=M      ! NUMBER OF DATA POINTS TO BE PLOTTED
```

```
4190    Nc=1     ! NUMBER OF CURVES TO BE PLOTTED
4200    Expand$="N"
4210    Data1$="1"
4220    !
4230    !
4240    !*************************************
4250  ! LABELS
4260    LDIR 0
4270    CSIZE 6
4280    LORG 5
4290    FOR I=-.1 TO .3 STEP .1
4300      MOVE 70+I,95
4310      LABEL Title$
4320    NEXT I
4330    CSIZE 5
4340    LORG 5
4350    MOVE 69,5
4360    LABEL Labelx$
4370    LDIR 90
4380    MOVE 6,52
4390    LABEL Labely$
4400    VIEWPORT 15,124,12,90
4410  !*************************************
4420  ! LINEAR-LINEAR AXES
4430    WINDOW Xmin,Xmax,Ymin,Ymax
4440    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
4450    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
4460    IF Grid$="Y" THEN GRID Nxtic*Xtic,Nytic*Ytic,Xmax,Ymax
4470  !
4480    CLIP OFF
4490    LDIR 0
4500    Ylab=(Ymax-Ymin)/20
4510    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)
4520      X1=I*Xtic*Nxtic+Xmin
4530      MOVE X1,Ymin
4540      LORG 6
4550      LABEL X1
4560    NEXT I
4570  !
4580    Xlab=(Xmax-Xmin)/25
4590    LDIR 90
4600    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
4610      Y1=I*Ytic*Nytic+Ymin
4620      MOVE -Xlab+Xmin,Y1
4630      IF ABS(Y1)<1.E-10 THEN GOTO 4650
4640      LABEL Y1
4650      IF ABS(Y1)<1.E-10 THEN LABEL "0"
4660    NEXT I
4670    LDIR 0
4680  !*****************************************
4690    CLIP ON
4700    IF Data1$="3" THEN
4710      DIM Tri(3,2)
4720      READ Tri(*)
4730    END IF
```

```
4740    IF Probe$="P" THEN
4750      LINE TYPE 5
4760      MOVE 0,1
4770      IDRAW 1.2,0
4780      LINE TYPE 1
4790    END IF
4800    LORG 5
4810    CSIZE 4,.5
4820    FOR I=1 TO N
4830      Xd(I)=(Ynd(I)+Yeff)
4840    NEXT I
4850    FOR I=1 TO Nc*N
4860      IF Probe$="P" THEN Yd(I)=Und(I)
4870      IF Probe$="HW" THEN Yd(I)=Ndnst(I)
4880    NEXT I
4890    FOR J=1 TO Nc
4900      FOR I=1 TO N
4910        X=Xd(I+N*(J-1))
4920        Y=Yd(I+N*(J-1))
4930        IF I=1 THEN MOVE X,Y
4940        IF I=1 THEN Xp=X
4950        IF I=1 THEN Yp=Y
4960        Xz=X-Xp
4970        Yz=Y-Yp
4980        MOVE Xp,Yp
4990        IF Con$="Y" THEN IDRAW Xz,Yz
5000        MOVE X,Y
5010        IF Data1$="1" THEN LABEL "+"
5020        Xside=(Xmax-Xmin)/40
5030        Yside=(Ymax-Ymin)/30
5040        AREA INTENSITY .5,.5,.5
5050        IF Data1$="2" THEN
5060          MOVE X-Xside/2,Y-Yside/2
5070          RECTANGLE Xside,Yside,FILL,EDGE
5080        END IF
5090        IF Data1$="3" THEN
5100          MOVE X-Xside/2,Y-Yside/2
5110          GOTO 5160  ! CLOSED TRIANGLES
5120        ! OPEN TRIANGLES
5130          DRAW X,Y+Yside/2
5140          DRAW X+Xside/2,Y-Yside/2
5150          DRAW X-Xside/2,Y-Yside/2
5160        ! CLOSED TRIANGLES
5170          RPLOT Tri(*),FILL,EDGE
5180        END IF
5190        Xp=X
5200        Yp=Y
5210      NEXT I
5220    NEXT J
5230  !****************************************
5240    INPUT "DO YOU WISH A HARD COPY ? (Y/N)",A5$
5250    IF A5$="Y" THEN
5260      INPUT "DO YOU WISH EXPANDED MODE ? (Y/N)",Expand$
5270      IF Expand$="Y" THEN
5280        DUMP DEVICE IS 701,EXPANDED
```

```
5290          DUMP GRAPHICS
5300          OUTPUT 701;"
                         "
5310        END IF
5320        IF Expand$="N" THEN
5330          DUMP GRAPHICS ! TO #701
5340          OUTPUT 701;"
                         "
5350        END IF
5360      END IF
5370      GCLEAR
5380    !*****************************************
5390    SUBEND
5400    !*************************************************************************
```

```
10    !*************************************************************************
20    !
30    ! DATA REDUCTION PROGRAM FOR TEMPERATURE (TRED_CW)
40    ! THIS PROGRAM PERFORMS THE FOLLOWING:
50    !   1).  CALCULATES Del_th, Del_enth, and Del_cond from the velocity and
                temperature profiles on disc.
60    !   2).  CALCULATES and PLOTS (Tw-T)/(Tw-Tinf) vs. Y/Del_th.
70    !   3).  CALCULATES Prt from Tplus vs. Yplus data.  The Clauser technique
                is used in the turbulent region.  Tplus vs. Yplus is plotted.
80    !   4).  Curvature correction for velocity is made.
81    !
90    !*************************************************************************
100   !
110   DIM Yv(50),U(50),Yt(50),T(50),Ynd(50),Tnd(50),Tplus(50),Yplus(50)
120   DIM Comv$[200],Comt$[200]
130   REAL Nstress,H
140   !
150   ! INPUT DATA FROM DISC
160   INPUT "WAS VELOCITY DATA TAKEN USING A PITOT TUBE OR A HOT-WIRE? (P/HW)",P
robe$
170   IF Probe$="HW" THEN
180     INPUT "WAS INTERMITTENCY PROCESSING DONE ? (Y/N)",Intp$
190   END IF
200   INPUT "READ DATA:  PLACE DISC IN DRIVE 1 AND INPUT NAME OF VEL. FILE, TEMP
. FILE  ",Vfile$,Tfile$
210   MASS STORAGE IS ":CS80,700,1"
220   !
230   ! READ VELOCITY DATA
240   ASSIGN @Readfile TO Vfile$
250   ENTER @Readfile;Comv$,Temp,Press,St,Mv
260   FOR J=1 TO Mv
270     IF Probe$="P" THEN ENTER @Readfile;Yv(J),U(J)
280     IF Probe$="HW" THEN
290       IF Intp$="Y" THEN
300         ENTER @Readfile;Yv(J),U(J),Ul,Ut,Uprm,Uprl,Uprt,Inter
310       ELSE
320         ENTER @Readfile;Yv(J),U(J),Up
330       END IF
340     END IF
350   NEXT J
360   !
370   ! READ TEMPERATURE DATA
380   ASSIGN @Readfiles TO Tfile$
390   ENTER @Readfiles;Comt$,St,Mt,Press,Tw,Tinf,Qw
400   PRINT
410   FOR J=1 TO Mt
420     ENTER @Readfiles;Yt(J),T(J)
430   NEXT J
440   MASS STORAGE IS ":CS80,700,0"
450   INPUT "DO YOU WISH TO READ COMMENTS? (Y/N)",Read$
460   IF Read$="Y" THEN
470     PRINT Comv$
480     PRINT Comt$
490   END IF
500   !*****************************************************
```

```
510   !
520   CALL Xst(St,X)                    ! DISTANCE FROM LEADING EDGE [m]
530   !
540   CALL Prtcal(Yt(*),Yv(*),T(*),Yefft,Mt,U(*),Mv,Qw,Press,Yplus(*),Tplus(*),P
rt,X,Tw,Tinf,Const,Y4,Nto)
550   !
560   INPUT "DO YOU WISH TO CALCULATE BOUNDARY LAYER PARAMETERS? (Y/N)",Bp$
570   IF Bp$="Y" THEN CALL Blp(Yt(*),T(*),Yefft,Mt,Yv(*),U(*),Mv,Delther,Delenth
,Delcond,Reh,Ynd(*),Tnd(*),Tw,Qw,Press,Qadded,Nto)
580   !
590   CALL Dataprint(Tfile$,St,X,Yt(*),T(*),Yefft,Mt,Delther,Delenth,Delcond,Reh
,Ynd(*),Tnd(*),Tw,Tinf,Qw,Yplus(*),Tplus(*),Prt,Const,Qadded,Nto)
600   !
610   INPUT "DO YOU WISH A PLOT OF THE DATA? (Y/N)",Plotd$
620   Y1=.05/Delther
630   IF Plotd$="Y" THEN CALL Dataplot1(Mt,Ynd(*),Tnd(*)," ",0,1.2,.1,2,0,1.2,.1
,2,"Y/Delta","(Tw-T)/(Tw-Tinf)",0,2,Nto,0)
640   END
650   !*************************************************************************
660   !
670   !
680   !*************************************************************************
690   !
700   SUB Xst(St,X)
710     IF St=1 THEN X=3.5*2.54/100
720     IF St=2 THEN X=13.5*2.54/100
730     IF St=3 THEN X=24.0*2.54/100
740     IF St=4 THEN X=34.5*2.54/100
750     IF St=5 THEN X=44.5*2.54/100
760     IF St=6 THEN X=49.5*2.54/100
770   SUBEND
780   !
790   !*************************************************************************
800   !
810   !
820   !*************************************************************************
830   !
840   SUB Prtcal(Yt(*),Yv(*),T(*),Yefft,Mt,U(*),Mv,Qw,Press,Yplus(*),Tplus(*),Pr
t,X,Tw,Tinf,Const,Y4,Nto)
850     !
860     !****************************************
870     OPTION BASE 1
880     DIM Ynt(50),Ynv(50),Tn(50),Yt1(50)
890     !****************************************
900     !
910     ! CORRECT TEMP. DATA FOR VELOCITY: CONVERT FROM TOTAL TO STATIC TEMP.S
920     FOR J=1 TO Mt
930       CALL Cpcal(Cp,T(J),Press)
940       Rc=.88  ! RECOVERY FACTOR
950       !
960       ! FIND RANGE OF YT(J)
970       Yv(0)=0.
980       U(0)=0.
990       FOR I=1 TO Mv
1000        IF Yt(J)<Yv(I) THEN
```

```
1010          M2=I
1020          GOTO 1100
1030        END IF
1040        IF Yt(J)>Yv(Mv) THEN
1050          Velj=U(Mv)
1060          GOTO 1150
1070        END IF
1080      NEXT I
1090      !
1100      ! FIND VELOCITY AT YT(J)
1110      Fra=(Yt(J)-Yv(M2-1))/(Yv(M2)-Yv(M2-1))
1120      Velj=(U(M2)-U(M2-1))*Fra+U(M2-1)
1130      !
1140      ! COMPUTE STATIC TEMPERATURE
1150      T(J)=T(J)-Velj^2/2/Cp*Rc
1160    NEXT J
1170    Tinf=Tinf-U(Mv)^2/2/Cp*Rc
1180    !*****************************************
1190    !
1200    INPUT "LAMINAR OR TURBULENT CORRELATION? (L/T)",B3$
1210    ! DETERMINE Yefft:
1220    !
1230    INPUT "DO YOU WISH TO FIND Yefft? (Y/N)",Det$
1240    Yefft=0.        ! INITIAL Yefft
1250    Xmax=.25
1260    Ymax=.5
1270    IF Det$="Y" THEN
1280      ! CALCULATE NON-DIMENSIONAL TEMPERATURE
1290      FOR I=1 TO Mt
1300        Tn(I)=(Tw-T(I))/(Tw-Tinf)
1310      NEXT I
1320      !
1330      ! CALCULATE SLOPE AT WALL FROM HEAT FLUX DATA
1340      Tave=(Tw+T(Mt))/2
1350      CALL Condcalc(Cond,Tave,Press)
1360      Dtdy=-Qw/Cond
1370      Y4=-Dtdy*5/(Tw-Tinf)/100
1380      !
1390      ! PLOT DATA
1400      FOR I=1 TO Mt
1410        Yt1(I)=Yt(I)+Yefft
1420      NEXT I
1430      INPUT "INPUT XMAX,YMAX FOR PLOT (START : .25,.5)",Xmax,Ymax
1431      Nto=1
1440      CALL Dataplot1(Mt,Yt1(*),Tn(*),"  ",0,Xmax,.05,1,0,Ymax,.1,1,"Y [cm]",
"(Tw-T)/(Tw-Tinf)",Y4,1,Nto,0)
1450      INPUT "TRY AGAIN? (Y/N)",Try$
1460      IF Try$="Y" THEN
1470        INPUT "INPUT Yeff (cm)",Yefft
1480        GOTO 1390
1490      END IF
1500    END IF
1510    !*****************************************
1520    !
1530    ! CALCULATION OF Upw:
```

```
1540    Radius=90                                ! WALL CURVATURE [m]
1550    Vel_const=(U(Mv)*(Radius-Yv(Mv))+U(Mv-1)*(Radius-Yv(Mv-1)))/2
1560    Upw=Vel_const/Radius
1570    !
1580    ! CALCULATION OF MOLECULAR PRANDTL NUMBER
1590    Tave=(Tw+T(Mt))/2
1600    CALL Prcalc(Pr,Tave,Press)
1610    !*****************************************
1620    ! REDUCE DATA TO T-PLUS AND Y-PLUS COORDINATES
1630    INPUT "INPUT Cf OBTAINED FROM CORRESPONDING VELOCITY DATA: ",Cf
1640    Const=13.2  ! INITIAL GUESS
1650    Flagyeff=0.
1660    INPUT "HOW MANY DATA POINTS DO YOU WISH TO TAKE OUT? (FROM THE BEGINNING
)",Nto
1670    IF B3$="T" THEN
1680      INPUT "WHAT DO YOU WISH TO INPUT?  A. Prt  B. Cond",In$
1690      IF In$="A" THEN INPUT "INPUT Prt",Prt
1700      IF In$="B" THEN INPUT "INPUT Cond ",Const
1710    END IF
1720    IF Flageff>.5 THEN 1930
1730    FOR J=1 TO Mt
1740      IF Flagyeff<.5 THEN Ynt(J)=Yt(J)+Yefft
1750      IF Ynt(J)<=1.E-6 THEN Yn(J)=1.E-40
1760      !
1770      CALL Viscalc(Visc,T(J),Press)     ! CALCULATE VISCOSITY [m^2/S]
1780      CALL Cpcal(Cp,T(J),Press)         ! CALCULATE HEAT CAPACITY [J/Kg/K]
1790      CALL Rhocal(Rho,T(J),Press)       ! CALCULATE DENSITY [Kg/m^3]
1800      !
1810      Upot=Vel_const/(Radius-Ynt(J))    ! LOCAL POTENTIAL VELOCITY [m/S]
1820      !
1830      ! CALCULATION OF Y+
1840      Yplus(J)=Ynt(J)*Upot*SQR(Cf/2.)/Visc/100.
1850      !
1860      ! CALCULATION OF T+
1870      Tplus(J)=(Tw-T(J))*Upot*SQR(Cf/2)/(Qw/Rho/Cp)
1880    NEXT J
1890    CALL Viscalc(Visc,T(Mt),Press)
1900    Rex=Upw*X/Visc
1910    Flageff=1.
1920    !*****************************************
1930    ! PLOTTING OF CURVES
1940    DIM Eta(30),Pe(30)
1950    GRAPHICS ON
1960    GCLEAR
1970    GINIT
1980    CSIZE 4,.5
1990    DEG
2000    !*****************************************
2010    ! DRAW AXES
2020    Xtic=1.
2030    Ytic=5.
2040    Xmax=LGT(3000)
2050    Ymax=45
2060    Xmin=0.
2070    Ymin=0.
```

```
2080    Crox=.01*Xmax
2090    Croy=.012*Ymax
2100    Xwin=-(Xmax-Xmin)*.15
2110    Ywin=-(Ymax-Ymin)*.15
2120    WINDOW Xwin,Xmax,Ywin,Ymax
2130    FRAME
2140    AXES Xtic,Ytic,Xmin,Ymin
2150    MOVE .2,Ymax-5
2160    LABEL File$
2170    MOVE .2,Ymax-7.5
2180    IF B3$="T" THEN LABEL USING """Prt= "",D.DDE";Prt
2190    MOVE .2,Ymax-10.0
2200    IF B3$="T" THEN LABEL USING """COND= "",2D.2D";Const
2210    IF B3$="L" THEN
2220      MOVE .2,Ymax-7.5
2230      LABEL USING """Yefft= "",D.4D,"" [cm]""";Yefft
2240      MOVE .2,Ymax-12.5
2250      LABEL USING """RE-X= "",D.DDE";Rex
2260    END IF
2270    J1=(Ymax-Ymin)/Ytic-1
2280    FOR J=0 TO J1
2290      LORG 1
2300      MOVE (Xwin-Xmin)/3.,5.*J
2310      Yval=5.*J
2320      LABEL USING "2D";Yval
2330    NEXT J
2340    MOVE (Xwin-Xmin)/3.*2,Ymax-5.
2350    Xval=10.
2360    LORG 4
2370    FOR I=1 TO 3
2380      MOVE I,(Ywin-Ymin)/2.
2390      LABEL USING "4D";Xval
2400      Xval=Xval*10.
2410    NEXT I
2420    MOVE Xmax-2.,Ywin+2.
2430    LABEL "Y+"
2440    MOVE Xmin-.2,Ywin+30
2450    LDIR 90
2460    LABEL "T+"
2470    LDIR 0
2480  ! DRAW ANALYTIC LINE***************
2490    MOVE 0,1
2500    Ia=500
2510    FOR I=1 TO Ia
2520      Yd=49/Ia*I+1
2530      Xd=LGT(Yd/Pr)
2540      DRAW Xd,Yd
2550    NEXT I
2560    Ja=500
2570    CALL Prcalc(Pr,Tave,Press)
2580    IF B3$="T" THEN
2590      MOVE LGT(10),Const*Pr+(Prt/.41)*LOG(10/Const)
2600      Xd=LGT(3000)
2610      Yd=Const*Pr+(Prt/.41)*LOG(3000/Const)
2620      DRAW Xd,Yd
```

```
2630    END IF
2640    ! BLASIUS PROFILE*****************
2650    !
2660    GOTO 2870
2670    IF B3$="L" THEN
2680      DIM Teta(402),Tau(402)
2690      Pra$=VAL$(DROUND(Pr,3)*1000)
2700      Tdat$="TBLA"&Pra$
2710      ASSIGN @Pathe TO Tdat$
2720      ENTER @Pathe;Teta(*),Tau(*)
2730      LORG 5
2740      Ypre=0.
2750      Tpre=0.
2760      FOR I=10 TO 400 STEP 2
2770        Ypl=Teta(I)*SQR(Visc*X/Upw)*(Upw*SQR(Cf/2))/Visc
2780        Tdiff=Tau(I)*(Tw-Tinf)
2790        Tpl=Tdiff*Upw*SQR(Cf/2)/(Qw/Rho/Cp)
2800        MOVE Ypre,Tpre
2810        IF I=10 THEN 2830
2820        IDRAW LGT(Ypl)-Ypre,Tpl-Tpre
2830        Ypre=LGT(Ypl)
2840        Tpre=Tpl
2850      NEXT I
2860    END IF
2870    !
2880    !*****************************************
2890    ! PLOT DATA
2900    LORG 5
2910    FOR J=1 TO Mt
2920      IF J<=Nto THEN 2980
2930      IF Yplus(J)<=0. THEN 2980
2940      Ylog=LGT(Yplus(J))
2950      MOVE Ylog,Tplus(J)
2960      CSIZE 6
2970      LABEL "+"
2980    NEXT J
2990    !*****************************************
3000    ! MAKE CORRECTIONS TO LAMINAR CASE
3010    !
3020    IF B3$="L" THEN
3030      INPUT "DO YOU WISH TO MODIFY A). Tw, B). Yefft, C). NO MODIFICATION",M
od$
3040      IF Mod$="A" THEN
3050        BEEP
3060        DISP USING """Tw= "",2D.3D ";Tw
3070        WAIT 2.5
3080        INPUT "INPUT Tw [C]",Tw
3090        GOTO 1640
3100      END IF
3110      IF Mod$="B" THEN
3120        BEEP
3130        DISP USING """Yefft= "",D.3D";Yefft
3140        WAIT 2.5
3150        INPUT "INPUT Yefft [cm]",Yefft
3160        GOTO 1640
```

```
3170      END IF
3180    END IF
3190    !****************************************
3200    !
3210    INPUT "DO YOU WANT A HARD COPY? (Y OR N)",Copy$
3220    IF Copy$="Y" THEN
3230      INPUT "DO YOU WISH EXPANDED MODE?",Expan$
3240      IF Expan$="Y" THEN
3250        DUMP DEVICE IS 701,EXPANDED
3260        DUMP GRAPHICS
3270      ELSE
3280        DUMP DEVICE IS 701
3290        DUMP GRAPHICS
3300      END IF
3310    END IF
3320    IF Copy$="Y" THEN OUTPUT 701;"   "
3330    INPUT "DO YOU WANT TO TRY AGAIN? (Y OR N)",Try$
3340    IF Try$="Y" THEN 1660
3350    GCLEAR
3360    !****************************************
3370    !
3380  SUBEND
3390  !*****************************************************************************
3400  !
3410  !
3420  !*****************************************************************************
3430  !
3440  SUB Blp(Yt(*),T(*),Yefft,Mt,Yv(*),U(*),Mv,Delther,Delenth,Delcond,Reh,Ynd(
*),Tnd(*),Tw,Qw,Press,Qadded,Nto)
3450    DIM Q1(51),Q2(51),Xn(50),Ynv(50),Ynt(50)
3460    !
3470    INPUT "INPUT Yeff FROM CORRESPONDING VELOCITY PROFILE",Yeffv
3480    FOR J=1 TO Mv
3490      Ynv(J)=(Yv(J)+Yeffv)/100     ! CORRECT Y's AND CONVERT TO METERS
3500      IF Ynv(J)<0. THEN Ynv(J)=0.
3510    NEXT J
3520    FOR J=1 TO Mt
3530      Ynt(J)=(Yt(J)+Yefft)/100
3540      IF Ynt(J)<0. THEN Ynt(J)=0.
3550    NEXT J
3560    !
3570    ! COMPUTE UPW
3571    Radius=97
3580    Vel_const=(U(Mv)*(Radius-Yv(Mv))+U(Mv-1)*(Radius-Yv(Mv-1)))/2
3590    Upw=Vel_const/Radius
3600    !
3610    Tinf=(T(Mt)+T(Mt-1))/2          ! Tinf IS AVERAGE OF LAST TWO MEASUREMENTS
3620    Tave=(T(Mt)+Tw)/2               ! Tave IS FILM TEMPERATURE
3630    !
3640    ! FLUID PROPERITES
3650    CALL Cpcal(Cp,Tave,Press)
3660    CALL Rhocal(Rho,Tave,Press)
3670    !
3680    ! CALCULATE BOUNDARY LAYER THICKNESS (Delther) BY SIMPLE INTERPOLATION
3690    !
```

```
3700    ! NON-DIMENSIONAL TEMPERATURE PROFILE
3710    FOR I=1 TO Mt
3720      Tnd(I)=(Tw-T(I))/(Tw-Tinf)
3730    NEXT I
3740    !
3750    FOR I=1 TO Mt
3760      IF (Tw-T(I))/(Tw-Tinf)>.995 THEN
3770        M1=I
3780        GOTO 3810
3790      END IF
3800    NEXT I
3810    Frac=(.995-Tnd(M1-1))/(Tnd(M1)-Tnd(M1-1))
3820    Delther=(Frac*(Ynt(M1)-Ynt(M1-1))+Ynt(M1-1))
3830    !
3840    ! CALCULATE NON-DIMENSIONAL TEMPERATURE PROFILE (DT/DTw vs. Y/Del995)
3850    FOR I=1 TO Mt
3860      Ynd(I)=Ynt(I)/Delther
3870      Tnd(I)=(Tw-T(I))/(Tw-Tinf)
3880    NEXT I
3890    !
3900    ! CALCULATE EHTHALPY THICKNESS
3910    !
3920    ! CALCULATE U(T-Tinf) AT EACH LOCATION
3930    FOR J=1 TO Mt
3940      Ynv(0)=0.
3950      U(0)=0.
3960      !
3970      ! FIND RANGE OF YT(J)
3980      FOR I=1 TO Mv
3990        IF Ynt(J)<Ynv(I) THEN
4000          M2=I
4010          GOTO 4090
4020        END IF
4030        IF Ynt(J)>Ynv(Mv) THEN
4031          Radius=.97
4034          Vel_const=(U(Mv)*(Radius-Ynv(Mv))+U(Mv-1)*(Radius-Ynv(Mv-1)))/2
4035          Upt=Vel_const/(Radius-Ynt(J))    ! POTENTIAL VELOCITY AT Ynt(J)
4050          GOTO 4220
4060        END IF
4070      NEXT I
4080      !
4090      ! FIT PARABOLA THROUGH Yv(M2-1),Yv(M2),Yv(M2+1): U=A*Yv^2+B*Yv+C
4100      X1=Ynv(M2-1)
4110      X2=Ynv(M2)
4120      X3=Ynv(M2+1)
4130      Y1=U(M2-1)
4140      Y2=U(M2)
4150      Y3=U(M2+1)
4160      B=((Y3-Y2)*(X1^2-X2^2)-(Y1-Y2)*(X3^2-X2^2))/((X3-X2)*(X1^2-X2^2)-(X1-X
2)*(X3^2-X2^2))
4170      A=((Y1-Y2)-B*(X1-X2))/(X1^2-X2^2)
4180      C=Y1-A*X1^2-B*X1
4190      Upt=A*Ynt(J)*Ynt(J)+B*Ynt(J)+C      ! VELOCITY AT Ynt(J)
4200      !
4210      ! COMPUTE U*(T-Tinf) CORRESPONDING TO Ynt(J)
```

```
4220      Q1(J)=Upt*(T(J)-Tinf)
4230      !
4240    NEXT J
4250    Sum1=0.
4260    Ynt(0)=0.
4270    Q1(0)=0.
4280    FOR I=0 TO Mt-2
4290      !
4300      ! CALCULATE COEFFICIENTS A,B,C IN Y=AX^2+BX+C
4310      X1=Ynt(I)
4320      X2=Ynt(I+1)
4330      IF Ynt(I+1)=0. THEN 4460
4340      X3=Ynt(I+2)
4350      Y11=Q1(I)
4360      Y12=Q1(I+1)
4370      Y13=Q1(I+2)
4380      B1=((Y13-Y12)*(X1^2-X2^2)-(Y11-Y12)*(X3^2-X2^2))/((X3-X2)*(X1^2-X2^2)-
(X1-X2)*(X3^2-X2^2))
4390      A1=((Y11-Y12)-B1*(X1-X2))/(X1^2-X2^2)
4400      C1=Y11-A1*X1^2-B1*X1
4410      !
4420      ! CALCULATE AREA
4430      Delarea1=A1/3*(X2^3-X1^3)+B1/2*(X2^2-X1^2)+C1*(X2-X1)
4440      IF I=M-2 THEN Delarea1=A1/3*(X3^3-X1^3)+B1/2*(X3^2-X1^2)+C1*(X3-X1)
4450      Sum1=Sum1+Delarea1
4460    NEXT I
4470    !
4480    Delenth=Sum1/Upw/(Tw-Tinf)
4482    Delenth=(EXP((1/Radius)*Delenth)-1)*Radius
4490    Qadded=Upw*Delenth*(Tw-Tinf)*Rho*Cp      ! HEAT FLUX PER UNIT SPAN [W/m]
4500    !*****************************************
4510    !
4520    ! CALCULATE CONDUCTION THICKNESS
4530    CALL Condcalc(Cond,Tave,Press)
4540    Delcond=Cond*(Tw-Tinf)/Qw
4550    !*****************************************
4560    !
4570    ! CALCULATE REYNOLDS NUMBER
4580    CALL Viscalc(Visc,Tave,Press)
4590    Reh=Upw*Delenth/Visc
4600  !*******************************************
4610  !
4620  SUBEND
4630  !*************************************************************************
4640  !
4650  !
4660  !*************************************************************************
4670  !
4680  SUB Dataprint(Tfile$,St,X,Yt(*),T(*),Yefft,Mt,Delther,Delenth,Delcond,Reh,
Ynd(*),Tnd(*),Tw,Tinf,Qw,Yplus(*),Tplus(*),Prt,Const,Qadded,Nto)
4690    !
4700    !***************************************
4710    INPUT "PRINT DATA ON SCREEN OR PRINTER? (S/P)",Pr$
4720    PRINTER IS 1
4730    IF Pr$="P" THEN
```

```
4740       INPUT "TURN PRINTER ON",Inp$
4750       PRINTER IS 701
4760     END IF
4770     !
4780     PRINT USING "/,""FILE: "",10A";Tfile$
4790     PRINT USING "/,""STATION:  "",2D";St
4800     PRINT USING "/,""Xsta   = "",D.3D,X,""[m]"",15X,""Del-ther = "",D.3DESZ,
X,""[m]""";X,Delther
4810     PRINT USING """Tw     = "",2D.2D  ,"" [C]"",15X,""Del-enth = "",D.3DESZ,
X,""[m]""";Tw,Delenth
4820     PRINT USING """Tinf   = "",2D.2D,X,""[C]"",15X,""Del-cond = "",D.3DESZ,"
" [m]""";Tinf,Delcond
4830     PRINT USING """Qw     = "",D.3DESZ,X,""[W/m^2]"",8X,""Re-enth  = "",D.3D
ESZ";Qw,Reh
4840     PRINT USING """Yeff   = "",SD.3DESZ,"" [m]"",11X,""Prt      = "",D.3D";Y
efft/100,Prt
4850     PRINT USING """Cond   = "",2D.2D,19X,""Qadded   ="",4D.2D,"" [W/m]""";Co
nst,Qadded
4860     !
4870     PRINT USING "2/,6X,""Y [cm]"",3X,""T [C]  "",12X,""Y+"",6X,""T+"",11X,""
Y/Del995"",2X,""DT/DTw"",/"
4880     !
4890     FOR I=Nto TO Mt
4900       PRINT USING "X,2D,2X,S2D.3D,3X,3D.3D,9X,4D.2D,3X,3D.2D,10X,D.3D,3X,D.3
D";I-Nto+1,(Yt(I)+Yefft),T(I),Yplus(I),Tplus(I),Ynd(I),Tnd(I)
4910       IF INT(I/5)=I/5 THEN PRINT
4920     NEXT I
4930     PRINTER IS 1
4940     !****************************************
4950     !
4960   SUBEND
4970   !*************************************************************************
4980   !
4990   !
5000   !*************************************************************************
5010   SUB Dataplot(M,Xplot(*),Yplot(*),Title$,Xmin,Xmax,Xtic,Nxtic,Ymin,Ymax,Yti
c,Nytic,Labelx$,Labely$,Nto)
5020     !****************************************
5030     OPTION BASE 1
5040     DIM Xd(50),Yd(50) !Title$[50]!,Labelx$[50],Labely$[50]!Yplot(50),Xplot(5
0)
5050     GRAPHICS ON
5060     GCLEAR
5070     GINIT
5080     LORG 5
5090     DEG
5100     !****************************************
5110     N=M    ! NUMBER OF DATA POINTS DO YOU WISH TO PLOT
5120     Nc=1   ! NUMBER OF CURVES DO YOU WISH TO PLOT
5130     Expand$="N"   ! EXPANDED GRAPHICS PRINT MODE?
5140     Data1$="2"   ! LABEL DATA AS 1). CROSSES, 2). SQUARES, OR 3). TRIANGLES ?
5150     ! IF  TRIANGLES ARE DESIRED, UNCOMMENT AND ENTER VERTEX DATA BELOW AS:
           DATA 0,0,   (XMAX- XMIN)/40,0,  (XMAX-XMIN)/80,(YMAX-YMIN)/30
5160     ! DATA 0,0,  .00125,0,  .000625,.033333
5170     !****************************************
```

```
5180    ! LABELS
5190    LDIR 0
5200    CSIZE 6
5210    LORG 5
5220    FOR I=-.1 TO .3 STEP .1
5230      MOVE 70+I,95
5240      LABEL Title$
5250    NEXT I
5260    CSIZE 5
5270    LORG 5
5280    MOVE 69,5
5290    LABEL Labelx$
5300    LDIR 90
5310    MOVE 6,52
5320    LABEL Labely$
5330    VIEWPORT 15,124,12,90
5340    !*****************************************
5350    ! LINEAR-LINEAR AXES
5360    WINDOW Xmin,Xmax,Ymin,Ymax
5370    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
5380    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
5390    IF Grid$="Y" THEN GRID Nxtic*Xtic,Nytic*Ytic,Xmax,Ymax
5400    !
5410    CLIP OFF
5420    LDIR 0
5430    Ylab=(Ymax-Ymin)/20
5440    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)
5450      X1=I*Xtic*Nxtic+Xmin
5460      MOVE X1,Ymin
5470      LORG 6
5480      LABEL X1
5490    NEXT I
5500    !
5510    Xlab=(Xmax-Xmin)/25
5520    LDIR 90
5530    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
5540      Y1=I*Ytic*Nytic+Ymin
5550      MOVE -Xlab+Xmin,Y1
5560      IF ABS(Y1)<1.E-10 THEN GOTO 5580
5570      LABEL Y1
5580      IF ABS(Y1)<1.E-10 THEN LABEL "0"
5590    NEXT I
5600    LDIR 0
5610    !*****************************************
5620    CLIP ON
5630    IF Data1$="3" THEN
5640      DIM Tr1(3,2)
5650      READ Tr1(*)
5660    END IF
5670    IF Probe$="P" THEN
5680      LINE TYPE 5
5690      MOVE 0,1
5700      IDRAW 1.2,0
5710      LINE TYPE 1
5720    END IF
```

```
5730    LORG 5
5740    CSIZE 4,.5
5750    FOR I=1 TO N
5760      Xd(I)=(Xplot(I)+Yeff)
5770    NEXT I
5780    FOR I=1 TO Nc*N
5790      Yd(I)=Yplot(I)
5800    NEXT I
5810    FOR J=1 TO Nc
5820      FOR I=Nto TO N
5830        X=Xd(I+N*(J-1))
5840        Y=Yd(I+N*(J-1))
5850        IF I=1 THEN MOVE X,Y
5860        IF I=1 THEN Xp=X
5870        IF I=1 THEN Yp=Y
5880        Xz=X-Xp
5890        Yz=Y-Yp
5900        MOVE Xp,Yp
5910        IF Con$="Y" THEN IDRAW Xz,Yz
5920        MOVE X,Y
5930        IF Data1$="1" THEN LABEL "+"
5940        Xside=(Xmax-Xmin)/40
5950        Yside=(Ymax-Ymin)/30
5960        AREA INTENSITY .5,.5,.5
5970        IF Data1$="2" THEN
5980          MOVE X-Xside/2,Y-Yside/2
5990          RECTANGLE Xside,Yside,FILL,EDGE
6000        END IF
6010        IF Data1$="3" THEN
6020          MOVE X-Xside/2,Y-Yside/2
6030          GOTO 6080! CLOSED TRIANGLES
6040        ! OPEN TRIANGLES
6050          DRAW X,Y+Yside/2
6060          DRAW X+Xside/2,Y-Yside/2
6070          DRAW X-Xside/2,Y-Yside/2
6080        ! CLOSED TRIANGLES
6090          RPLOT Tri(*),FILL,EDGE
6100        END IF
6110        Xp=X
6120        Yp=Y
6130      NEXT I
6140    NEXT J
6150    !*****************************************
6160    INPUT "DO YOU WISH A HARD COPY? (Y OR N)",A5$
6170    IF A5$="Y" THEN
6180      INPUT "DO YOU WISH EXPANDED MODE? (Y/N)",Expand$
6190      IF Expand$="Y" THEN
6200        DUMP DEVICE IS 701,EXPANDED
6210        DUMP GRAPHICS
6220        OUTPUT 701;"
```

```
6230      END IF
6240      IF Expand$="N" THEN
6250        DUMP GRAPHICS 1 TO #701
6260        OUTPUT 701;"
6270      END IF
6280    END IF
6290    GCLEAR
6300    !****************************************
6310  SUBEND
6320  !*************************************************************************
6330  !
6340  !
6350  !*************************************************************************
6360  SUB Prcalc(Pr,Temp,Press)
6370    !
6380    Pr=-1.524E-4*(Temp+273.15)+.757
6390    !
6400  SUBEND
6410  !*************************************************************************
6420  !
6430  !
6440  !*************************************************************************
6450  SUB Viscalc(Visc,Temp,Press)
6460    !
6470    Visc=9.3277E-8*(Temp+273.15)-1.2248E-5 ! VISCOSITY AT 1 ATM (760 TORR)
6480    Visc=Visc*(760/Press)                  ! PRESSURE CORRECTION
6490    !
6500  SUBEND
6510  !*************************************************************************
6520  !
6530  !
6540  !*************************************************************************
6550  SUB Cpcal(Cp,Temp,Press)
6560    !
6570    Cp=.053*(Temp+273.15)+988.572
6580    !
6590  SUBEND
6600  !*************************************************************************
6610  !
6620  !
6630  !*************************************************************************
6640  SUB Rhocal(Rho,Temp,Press)
6650    !
6660    Rho0=1.1766                                ! DENSITY AT P=1 atm, T=300K
6670    Rho=Rho0*(Press/760)*(300/(Temp+273.15))! TEMP. AND PRESS. CORRECTION
6680    !
6690  SUBEND
6700  !*************************************************************************
6710  !
6720  !
6730  !*************************************************************************
6740  SUB Condcalc(Cond,Tave,Press)
6750    !
```

```
6760    Cond=7.305E-5*(Tave+273.15)+4.229E-3
6770    !
6780  SUBEND
6790  !*****************************************************************************
6800  SUB Dataplot1(M,Xplot(*),Yplot(*),Title$,Xmin,Xmax,Xtic,Nxtic,Ymin,Ymax,Yt
ic,Nytic,Label×$,Label y$,Y1,Flag1,Nto,Yefft)
6810    !***************************************
6820    OPTION BASE 1
6830    DIM Xd(50),Yd(50) !Title$[50]!,Label×$[50],Label y$[50]!Yplot(50),Xplot(5
0)
6840    GRAPHICS ON
6850    GCLEAR
6860    GINIT
6870    LORG 5
6880    DEG
6890    !*****************************************
6900    N=M    ! NUMBER OF DATA POINTS DO YOU WISH TO PLOT
6910    Nc=1   ! NUMBER OF CURVES DO YOU WISH TO PLOT
6920    Expand$="N"   ! EXPANDED GRAPHICS PRINT MODE?
6930    Data1$="1"   ! LABEL DATA AS 1). CROSSES, 2). SQUARES, OR 3). TRIANGLES ?
6940    ! IF  TRIANGLES ARE DESIRED, UNCOMMENT AND ENTER VERTEX DATA BELOW AS:
          DATA 0,0,   (XMAX- XMIN)/40,0,  (XMAX-XMIN)/80,(YMAX-YMIN)/30
6950    ! DATA 0,0,  .00125,0,  .000625,.033333
6960    !*****************************************
6970    ! LABELS
6980    LDIR 0
6990    CSIZE 6
7000    LORG 5
7010    FOR I=-.1 TO .3 STEP .1
7020      MOVE 70+I,95
7030      LABEL Title$
7040    NEXT I
7050    CSIZE 5
7060    LORG 5
7070    MOVE 69,5
7080    LABEL Label×$
7090    LDIR 90
7100    MOVE 6,52
7110    LABEL Label y$
7120    VIEWPORT 15,124,12,90
7130    !*****************************************
7140    ! LINEAR-LINEAR AXES
7150    WINDOW Xmin,Xmax,Ymin,Ymax
7160    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
7170    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
7180    IF Grid$="Y" THEN GRID Nxtic*Xtic,Nytic*Ytic,Xmax,Ymax
7190    !
7200    CLIP OFF
7210    LDIR 0
7220    Ylab=(Ymax-Ymin)/20
7230    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)
7240      X1=I*Xtic*Nxtic+Xmin
7250      MOVE X1,Ymin
7260      LORG 6
7270      LABEL X1
```

```
7280    NEXT I
7290    !
7300    Xlab=(Xmax-Xmin)/25
7310    LDIR 90
7320    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
7330      Yl=I*Ytic*Nytic+Ymin
7340      MOVE -Xlab+Xmin,Yl
7350      IF ABS(Yl)<1.E-10 THEN GOTO 7370
7360      LABEL Yl
7370      IF ABS(Yl)<1.E-10 THEN LABEL "0"
7380    NEXT I
7390    LDIR 0
7400    !****************************************
7410    CLIP ON
7420    IF Data1$="3" THEN
7430      DIM Tri(3,2)
7440      READ Tri(*)
7450    END IF
7460    IF Probe$="P" THEN
7470      LINE TYPE 5
7480      MOVE 0,1
7490      IDRAW 1.2,0
7500      LINE TYPE 1
7510    END IF
7520    LORG 5
7530    CSIZE 4,.5
7540    FOR I=1 TO N
7550      Xd(I)=(Xplot(I)+Yefft)
7560    NEXT I
7570    FOR I=1 TO Nc*N
7580      Yd(I)=Yplot(I)
7590    NEXT I
7600    FOR J=1 TO Nc
7610      FOR I=Nto TO N
7620        X=Xd(I+N*(J-1))
7630        Y=Yd(I+N*(J-1))
7640        IF I=1 THEN MOVE X,Y
7650        IF I=1 THEN Xp=X
7660        IF I=1 THEN Yp=Y
7670        Xz=X-Xp
7680        Yz=Y-Yp
7690        MOVE Xp,Yp
7700        IF Con$="Y" THEN IDRAW Xz,Yz
7710        MOVE X,Y
7720        IF Data1$="1" THEN LABEL "+"
7730        Xside=(Xmax-Xmin)/40
7740        Yside=(Ymax-Ymin)/30
7750        AREA INTENSITY .5,.5,.5
7760        IF Data1$="2" THEN
7770          MOVE X-Xside/2,Y-Yside/2
7780          RECTANGLE Xside,Yside,FILL,EDGE
7790        END IF
7800        IF Data1$="3" THEN
7810          MOVE X-Xside/2,Y-Yside/2
7820          GOTO 7870! CLOSED TRIANGLES
```

```
7830          ! OPEN TRIANGLES
7840            DRAW X,Y+Yside/2
7850            DRAW X+Xside/2,Y-Yside/2
7860            DRAW X-Xside/2,Y-Yside/2
7870          ! CLOSED TRIANGLES
7880            RPLOT Tri(*),FILL,EDGE
7890          END IF
7900          Xp=X
7910          Yp=Y
7920        NEXT I
7930      NEXT J
7940      IF Flag1=1 THEN
7950        MOVE 0,0
7960        IDRAW 5,Y1
7970      END IF
7980      IF Flag1=2 THEN
7990        LINE TYPE 5
8000        MOVE 0,1
8010        IDRAW 1.2,0
8020        LINE TYPE 1
8030      END IF
8040      !****************************************
8050      INPUT "DO YOU WISH A HARD COPY? (Y OR N)",A5$
8060      IF A5$="Y" THEN
8070        INPUT "DO YOU WISH EXPANDED MODE? (Y/N)",Expand$
8080        IF Expand$="Y" THEN
8090          DUMP DEVICE IS 701,EXPANDED
8100          DUMP GRAPHICS
8110          OUTPUT 701;"
                         "
8120        END IF
8130        IF Expand$="N" THEN
8140          DUMP GRAPHICS ! TO #701
8150          OUTPUT 701;"
                         "
8160        END IF
8170      END IF
8180      GCLEAR
8190      !****************************************
8200    SUBEND
```

```
10    !*************************************************************************
20    ! THIS PROGRAM IS USED TO REDUCE DATA FROM CROSS WIRES (UVRED_CW)
30    ! THE QUANTITIES FOUND ARE
40    !   1).  AVERAGE U AND V NORMALIZED BY UPW.
50    !   2).  RMS OF U AND V NORMALIZED BY UPW.
60    !   3).  u'v' NORMALIZED BY THE SHEAR VELOCITY Utau^2 AND Upw^2.
70    !   4).  CORRECTIONS ARE MADE FOR DIFFERENCES BETWEEN THE MEASUREMENT
80    !        OF UPW BY THE CROSS-WIRE AND THE PITOT TUBE.
90    !   5).  THE VALUES OF Cf, Upw AND DEL1 ARE OBTAINED FROM THE MEAN
100   !        VELOCITY MEASUREMENTS.
110   !   6).  THE EDDY VISCOSITY IS CALCULATED.
120   ! UPDATED 04/08/89
130   !*************************************************************************
140   DIM Yk(30),U(30),V(30),Upr(30),Vpr(30),Upvp(30),Com$[180]
150   DIM Ndy(30),Ndu(30),Ndv(30),Ndupr(30),Ndvpr(30),Ndupvp(30),Ndupvp1(30)
160   DIM Xd(30),Yd(30),Evisc(30),Title$[50],Labelx$[50],Labely$[50]
170   !****************************************
180   !
190   ! ENTER DATA FROM DATA FILE
200   INPUT "INPUT THE FILE TYPE AND DATE",File$
210   MASS STORAGE IS ":CS80,700,1"
220   ASSIGN @Uv TO File$
230   ENTER @Uv;Com$
240   PRINT USING "3X,60A,/";Com$
250   ENTER @Uv;Np
260   FOR I=1 TO Np
270     ENTER @Uv;Yk(I),U(I),V(I),Upr(I),Vpr(I),Upvp(I)
280   NEXT I
290   MASS STORAGE IS ":CS80,700,0"
300   !****************************************
310   !
320   ! INPUT THE PARAMTERS CF,UPW AND DELTA
330   BEEP
340   INPUT "Cf AND Upw [m/s]",Cf,Upw
350   !****************************************
360   !
370   N2=Np-1
380   Sumu=0.
390   Radius=97
400   Velconst=(U(Np)*(Radius-Yk(Np))+U(Np-1)*(Radius-Yk(Np-1)))/2
410   !****************************************
420   !
430   ! PRINT RAW DATA
440   PRINT "   RAW DATA--FILE NAME:  ";File$;
450   PRINT USING "3X,80A";Com$
460   PRINT "   N      Y [cm]      U [m/s]      V [m/s]  u' [m/S]     v' [m/s]  u'v'
  [m2/s2]"
470   PRINT
480   FOR I=1 TO Np
490     PRINT USING "#,2X,2D";I
500     PRINT USING "3X,4D.3D";Yk(I),U(I),V(I),Upr(I),Vpr(I),Upvp(I)
510   NEXT I
520   PRINT
530   PRINT USING "#,2X,11A,2D.2D";"Upw [m/s]= ",Upw
540   PRINT USING "4X,6A,D.3DESZ";"Cf= ",Cf
```

```
550   PRINT USING "//"
560   IF Hc$="Y" THEN OUTPUT 701;"
```

```
570   IF Hc$="Y" THEN 640
580   INPUT "DO YOU WANT A HARD COPY?",Hc$
590   IF Hc$="Y" THEN
600     Flag$="Y"
610     PRINTER IS 701
620     GOTO 440
630   END IF
640   Hc$=""
650   PRINTER IS 1
660   !*****************************************
670   !
680   ! COMPUTE NORMALIZED QUANTITIES
690   Utau=SQR(Cf/2)*Upw  ! SHEAR VELOCITY
700   FOR I=1 TO Np
710     Ndy(I)=Yk(I)/Radius
720     Ndu(I)=U(I)/Upw
730     Ndv(I)=V(I)/Upw
740     Ndupr(I)=Upr(I)/Upw
750     Ndvpr(I)=Vpr(I)/Upw
760     Ndupvp(I)=-Upvp(I)/Upw/Upw
770     Ndupvp1(I)=-Upvp(I)/Utau/Utau
780   NEXT I
790   !
800   ! COMPUTE EDDY VISCOSITY: VELOCITY GRADIENT CALCUALTED USING SIMPLE LINEAR
        FIT.
810   FOR I=1 TO Np
820     IF I=1 OR I=Np THEN
830       IF I=1 THEN
840         Grad=(U(I+1)-U(I))/(Yk(I+1)-Yk(I))*100
850       END IF
860       IF I=Np THEN
870         Grad=(U(I)-U(I-1))/(Yk(I)-Yk(I-1))*100
880       END IF
890     ELSE
900       Grad=((U(I+1)-U(I))/(Yk(I+1)-Yk(I))*100+(U(I)-U(I-1))/(Yk(I)-Yk(I-1))*
100)/2
910     END IF
920     Evisc(I)=-Upvp(I)/Grad
930   NEXT I
940   !*****************************************
950   !
960   ! PRINT REDUCED DATA
970   PRINT "   REDUCED DATA--FILE NAME:  ";File$;
980   IF Curve$="Y" THEN PRINT "   (CURVED WALL)"
990   IF Curve$="N" THEN PRINT "   (FLAT WALL)"
1000  PRINT USING "//"
1010  PRINT "
EDDY VISC. "
1020  PRINT "   N      y/R      U/Upw  u'/Upw  v'/Upw  u'v'/Upw^2  u'v'/Utau^2
[m^2/S]"
1030  PRINT
1040  FOR I=1 TO Np
1050    PRINT USING "#,2X,2D";I
1060    PRINT USING "3X,D.4D,3X,D.3D,3X,D.3D,3X,D.3D,3X,D.3D,3X,SD.5D,6X,SD.5D,5X,SD.5D"
```

```
;Ndy(I),Ndu(I),Ndupr(I),Ndvpr(I),Ndupvp(I),Ndupvp1(I),Evisc(I)
1070  NEXT I
1080  PRINT
1090  IF Curve$="Y" THEN PRINT USING "2X,29A,2D.2D    ";"MEASURED VALUE OF Upw [m
/S]= ",Upwm
1100  IF Hc$="Y" THEN OUTPUT 701;"
```

```
1110  IF Hc$="Y" THEN 1170
1120  INPUT "DO YOU WANT A HARD COPY?",Hc$
1130  IF Hc$="Y" THEN
1140    PRINTER IS 701
1150    GOTO 970
1160  END IF
1170  Hc$=""
1180  PRINTER IS 1
1190  !****************************************
1200  FOR Jp=1 TO 3
1210  ! PLOT OF NON-DIMENSIONALIZED QUANTITIES
1220    GRAPHICS ON
1230    GCLEAR
1240    GINIT
1250    CSIZE 4,.5
1260    DEG
1270  !*************************
1280    Title$="RMS OF VELOCITIES--"                    ! TITLE OF PLOT
1290    IF Jp>1.2 THEN Title$="SHEAR STRESS PROFILE--"
1300    Title$=Title$&File$
1310    Xmin=0.       ! MINIMUM VALUE OF X
1320    Xmax=.030 ! MAXIMUM VALUE OF X
1330    Xtic=.001
1340    Nxtic=5
1350    IF Jp=1 THEN      ! u'/Upw, v'/Upw
1360      Ymin=0.
1370      Ymax=.16
1380      Ytic=.005
1390      Nytic=4
1400    END IF
1410    IF Jp=2 THEN      ! u'v'/Upw^2
1420      Ymin=0.
1430      Ymax=.004
1440      Ytic=.0002
1450      Nytic=5
1460    END IF
1470    IF Jp=3 THEN      ! u'v'/Utau^2
1480      Ymin=0.
1490      Ymax=1.6
1500      Ytic=.05
1510      Nytic=4
1520    END IF
1530    Labelx$="y/R"                 ! X-AXIS LABEL
1540    Labely$="Upr/Upw, Vpr/Upw"  ! Y-AXIS LABEL
1550    IF Jp=2 THEN Labely$="-u'v'/Upw^2"
1560    IF Jp=3 THEN Labely$="-u'v'/Utau^2"
1570    N=Np ! THE NUMBER OF DATA POINTS DO YOU WISH TO PLOT
1580    Con$="N"! DO YOU WISH TO CONNECT POINTS? (Y OR N)
1590    Grid$="N"   ! GRID?
1600  !*************************
1610  ! LABELS
1620    LDIR 0
1630    CSIZE 6
1640    LORG 5
```

```
1650    FOR I=-.2 TO .2 STEP .1
1660      MOVE 70+I,95
1670      LABEL Title$
1680    NEXT I
1690    CSIZE 4
1700    LORG 5
1710    MOVE 69,5
1720    LABEL Labelx$
1730    LDIR 90
1740    MOVE 6,52
1750    LABEL Labely$
1760    VIEWPORT 15,124,12,90
1770  !
1780  ! LINEAR-LINEAR AXES
1790    WINDOW Xmin,Xmax,Ymin,Ymax
1800    FRAME
1810    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
1820    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
1830    IF Grid$="Y" THEN GRID Nxtic*Xtic,Nytic*Ytic,Xmax,Ymax
1840    CLIP OFF
1850  ! FRAME
1860    LDIR 0
1870    Ylab=(Ymax-Ymin)/20
1880    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)+1
1890      X1=I*Xtic*Nxtic+Xmin
1900      MOVE X1,Ymin
1910      LORG 6
1920      LABEL X1
1930    NEXT I
1940    !
1950    Xlab=(Xmax-Xmin)/25
1960    LDIR 90
1970    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
1980      Y1=I*Ytic*Nytic+Ymin
1990      MOVE -Xlab+Xmin,Y1
2000      LABEL Y1
2010    NEXT I
2020    LDIR 0
2030  !*************************
2040  ! PLOT DATA ENTERED MANUALLY
2050    CLIP ON
2060    LORG 5
2070    CSIZE 4,.5
2080    IF Jp=1 THEN Kp=2
2090    IF Jp=2 THEN Kp=1
2100    FOR J=1 TO Kp
2110      FOR I=1 TO N
2120        X=Ndy(I)
2130        IF Jp=1 THEN
2140          IF J=1 THEN Yp=Ndupr(I)
2150          IF J=2 THEN Yp=Ndvpr(I)
2160        END IF
2170        IF Jp=2 THEN
2180          IF J=1 THEN Yp=Ndupvp(I)
2190        END IF
```

```
2200        IF Jp=3 THEN Yp=Ndupvp1(I)
2210        !
2220        MOVE Xp,Yp
2230        MOVE X,Yp
2240        LABEL "+"
2250      NEXT I
2260    NEXT J
2270    IF Jp=3 THEN
2280      MOVE 0,1
2290      LINE TYPE 5
2300      IDRAW 50,0
2310      LINE TYPE 1
2320    END IF
2330  !*************************
2340    INPUT "DO YOU WISH A HARD COPY? (Y OR N)",A5$
2350    IF A5$="Y" THEN 2370
2360    GOTO 2470
2370    INPUT "DO YOU WISH AN EXPANDED PLOT ? (Y/N)",Exp$
2380    IF Exp$="Y" THEN
2390      DUMP DEVICE IS 701,EXPANDED
2400      DUMP GRAPHICS
2410      OUTPUT 701;"
                      "
2420    ELSE
2430      DUMP DEVICE IS 701
2440      DUMP GRAPHICS
2450    END IF
2460    OUTPUT 701;" "
2470  NEXT Jp
2480  !*****************************************
2490  GCLEAR
2500  END
```

```
10    !*************************************************************************
20    ! THIS PROGRAM IS USED TO DETERMINE K2*(H01/H02) IN PROCESSING DATA FOR
        TEMPERATURE FLUCTUATION MEASUREMENTS (K2H01H02).
30    !*************************************************************************
40    !
50    DIM Y(50),U(50),V(50),Upr(50),Vpr(50),Upvp(50),Com$[180]
60    DIM Volt1(1010),Volt2(1010),Volt4(1010),Va(1010)
70    DIM A$[8704] BUFFER,B$[8704] BUFFER,C$[8704] BUFFER,F$[300],Cexp$[300]
80    ASSIGN @Prowler1 TO 715
90    ASSIGN @Prowler2 TO 716
100   !****************************************
110   !
120   INPUT "DO YOU WISH TO TAKE NEW DATA OR USE OLD DATA ? (N/O)",Newold$
130   IF Newold$="O" THEN 1810
140   !
150   ! SET UP NORLAND PROWLERS
160   INPUT "DO YOU WISH EQUIPTMENT SETUP DETAILS ?",Eqptset$
170   IF Eqptset$="Y" THEN
180     PRINT USING "/,""PROWLER SETUP (ALL CHANNELS):"""
190     PRINT " MODE : TRIGGERED HOLD"
200     PRINT " RANGE : PROWLER #715--20V CH. A,B; PROWLER #716--MINIMIZE CH. B"
210     PRINT " BIAS : 0"
220     PRINT " COUPLING : DC"
230     PRINT USING "/,"" TRIGGER SOURCE : CHAN A"""
240     PRINT " SLOPE -"
250     PRINT " COUPLING : DC"
260     PRINT " LEVEL : 67.188%"
270     PRINT " WINDOW : .78125 %"
280     PRINT USING """ DELAY : 3568"",/"
290     PRINT "CHANNEL ASSIGNMENTS :"
300     PRINT USING "/,"" IFA 100 :"""
310     PRINT "  CHANNEL 2 ON IFA 100 : FROM HOT-WIRE (WIRE NO. 3)"
320     PRINT "    OFFSET = 1 V, GAIN = 10, FILTER = 5000 HZ"
330     PRINT USING "/,"" NORLAND (715) :"""
340     PRINT "  CHANNEL A : FROM AMPLIFIER (DO NOT GO THROUGH SIG. CONDITIONER)
"
350     PRINT "  CHANNEL B : FROM DIFFERENTIATOR (DO NOT GO THROUGH SIG. CONDITI
ONER)"
360     PRINT USING "/,"" NORLAND (716):"""
370     PRINT USING """  CHANNEL B : FROM CHANNEL 2 OF IFA 100"",2/"
380   END IF
390   !****************************************
400   !
410   ! SETUP PARAMETERS FOR CIRCUIT/SIGNAL CONDITIONERS/SIGNAL PROCESSING
420   ! CONSTANT CURRENT CIRCUIT :
430   Ccgain=1002.      ! GAIN OF AMPLIFIER
440   Ccoff=.085        ! OFFSET OF AMPLIFIER
450   Cctc=(-.00130)    ! TIME CONSTANT OF DIFFERENTIATOR (RC PRODUCT)
460   !
470   ! IFA 100 CHANNEL 2 :
480   Ifa2off=1.        ! OFFSET OF HOT-WIRE BRIDGE
490   Ifa2gain=10.      ! GAIN OF HOT-WIRE BRIDGE
500   !
510   ! IFA 100 CHANNEL 3 :
520   Ifa3off=0.        ! OFFSET OF COLD-WIRE BRIDGE
```

```
530   Ifa3gain=1.       ! GAIN OF COLD-WIRE BRIDGE
540   !
550   ! SIGNAL PROCESSING :
560   Epsilon=1/.878      ! EPSILON=R01/R02
570   V21=1.0E-3*9.68    ! V21=(COLD-WIRE CURRENT)*(HOT-WIRE RESISTANCE)
580   !
590   INPUT "ARE THE SETUP PARAMETERS FOR THE CIRCUIT/SIG. COND.S/SIG. PROC. COR
RECT ? (Y/N)",Setupp$
600   !****************************************
610   !
620   ! TRANSFER DATA FROM NORLAND TO COMPUTER
630   ASSIGN @Buffa TO BUFFER A$
640   ASSIGN @Buffb TO BUFFER B$
650   ASSIGN @Buffc TO BUFFER C$
660   ! TRANSFER ARRAY B[1/1] FROM PROWLER UNIT #15, A[1/1] AND B[1/1] FROM
        PROWLER UNIT #16
670   FOR J=1 TO 3
680     IF J=1 THEN OUTPUT 715 USING "#,K";"_KCGA"    ! CONTENTS OF CH. A UNIT 15
690     IF J=2 THEN OUTPUT 715 USING "#,K";"_KCGC"    ! CONTENTS OF CH. B UNIT 15
700     IF J=3 THEN OUTPUT 716 USING "#,K";"_KCGC"    ! CONTENTS OF CH. B UNIT 16
710     WAIT .5
720     IF J=1 THEN TRANSFER @Prowler1 TO @Buffa;COUNT 8452
730     IF J=2 THEN TRANSFER @Prowler1 TO @Buffb;COUNT 8452
740     IF J=3 THEN TRANSFER @Prowler2 TO @Buffc;COUNT 8452
750     WAIT 1.
760   NEXT J
770   CONTROL @Buffa,5;1    ! RESET BUFFER POINTERS
780   WAIT 1.
790   CONTROL @Buffb,5;1
800   WAIT 1.
810   CONTROL @Buffc,5;1
820   WAIT 1.
830   !*************************************************************
840   !
850   ! COMPUTE EXPONENT AND OFFSET
860   FOR K=1 TO 3
870     FOR J=1 TO 2
880       IF K=1 THEN ENTER @Buffa USING "#,2A";Exp$
890       IF K=2 THEN ENTER @Buffb USING "#,2A";Exp$
900       IF K=3 THEN ENTER @Buffc USING "#,2A";Exp$
910       V1=IVAL(Exp$,16)
920       Exp=2^(V1-128)
930       Su=.5
940       Power1=4.
950       FOR K5=1 TO 6
960         IF K=1 THEN ENTER @Buffa USING "#,A";F$
970         IF K=2 THEN ENTER @Buffb USING "#,A";F$
980         IF K=3 THEN ENTER @Buffc USING "#,A";F$
990         V1=IVAL(F$,16)
1000        Tot=V1/2^Powerk
1010        Powerk=Powerk+4.
1020        Su=Su+Tot
1030      NEXT K5
1040      IF J=1 THEN
1050        IF K=1 THEN Factor1=Su*Exp
```

```
1060        IF K=2 THEN Factor2=Su*Exp
1070        IF K=3 THEN Factor3=Su*Exp
1080      END IF
1090      IF J=2 THEN
1100        IF K=1 THEN Offset1=Su*Exp
1110        IF K=2 THEN Offset2=Su*Exp
1120        IF K=3 THEN Offset3=Su*Exp
1130      END IF
1140    NEXT J
1150    IF K=1 THEN ENTER @Buffa USING "#,240A";F$
1160    IF K=2 THEN ENTER @Buffb USING "#,240A";F$
1170    IF K=3 THEN ENTER @Buffc USING "#,240A";F$
1180  NEXT K
1190    !*****************************************************************
1200    !
1210    ! ENTER ANEMOMETER VOLTAGES FROM BUFFERS
1220  Ndat=1000
1230  FOR Ik=1 TO Ndat
1240    FOR K=1 TO 3
1250      IF K=1 THEN
1260        ENTER @Buffa USING "#,B";A1
1270        ENTER @Buffa USING "#,B";A2
1280      END IF
1290      IF K=2 THEN
1300        ENTER @Buffb USING "#,B";A1
1310        ENTER @Buffb USING "#,B";A2
1320      END IF
1330      IF K=3 THEN
1340        ENTER @Buffc USING "#,B";A1
1350        ENTER @Buffc USING "#,B";A2
1360      END IF
1370      V1=A2*256+A1-32768
1380      IF K=1 THEN Ew1=(V1*Factor1+Offset1)
1390      IF K=2 THEN Ew2=(V1*Factor2+Offset2)
1400      IF K=3 THEN Ew3=(V1*Factor3+Offset3)
1410    NEXT K
1420    Volt1(Ik)=Ew1      ! PROWLER 715 CH. A VOLTAGES (COLD-WIRE VOLTAGE)
1430    Volt2(Ik)=Ew2      ! PROWLER 715 CH. B VOLTAGES (COLD-WIRE DERIVATIVE)
1440    Volt4(Ik)=Ew3      ! PROWLER 716 CH. B VOLTAGES (HOT-WIRE VOLTAGE - W3)
1450    IF INT(Ik/100)=Ik/100 THEN DISP USING "4D,"" :"",4X,2D.5D,5X,2D.5D,5X,2D
.5D";Ik,Volt1(Ik),Volt2(Ik),Volt4(Ik)
1460  NEXT Ik
1470  !*****************************************************************
1480  !
1490  ! COMPUTE V2,DV2/DT,V3
1500  !
1510  FOR Ik=1 TO Ndat
1520    ! V1 : COLD-WIRE AFTER AMPLIFICATION, SIGNAL CONDITIONING
1530    Volt1(Ik)=Volt1(Ik)/Ifa3gain+Ifa3off    ! DE-CONDITION SIGNAL
1540    Volt1(Ik)=(Volt1(Ik)-Ccoff)/Ccgain      ! UN-DO AMPLIFICATION
1550    !
1560    ! V4: HOT-WIRE AFTER SIGNAL CONDITIONING
1570    Volt4(Ik)=Volt4(Ik)/Ifa2gain+Ifa2off    ! DE-CONDITION SIGNAL
1580    !
1590    ! VOLT2 : COLD-WIRE SIGNAL AFTER AMPLIFICATION, FILTERING, AND
```

```
                DIFFERENTIATION.
1600    Volt2(Ik)=Volt2(Ik)/Cctc                ! DIVIDE BY TIME CONSTANT
1610    Volt2(Ik)=Volt2(Ik)/Ccgain              ! DIVIDE BY AMPLIFICATION FACTOR
1620    !
1630    IF INT(Ik/100)=Ik/100 THEN DISP Ik,Volt1(Ik),Volt2(Ik),Volt4(Ik)
1640  NEXT Ik
1650  !
1660  ! STORE DATA
1670  INPUT "DO YOU WISH TO STORE THE VOLTAGES VOLT1(*), VOLT2(*), & VOLT4(*) ?
(Y/N)",Stord$
1680  IF Stord$="Y" THEN
1690    MASS STORAGE IS ":CS80,700,1"
1700    INPUT "INPUT A FILE NAME",File$
1710    CREATE BDAT File$,100
1720    ASSIGN @Writef TO File$
1730    OUTPUT @Writef;V21,Epsilon
1740    OUTPUT @Writef;Volt1(*),Volt2(*),Volt4(*)
1750    MASS STORAGE IS ":CS80,700,0"
1760    DISP "DATA STORED"
1770  END IF
1780  GOTO 1900
1790  !*****************************************
1800  !
1810  INPUT "PLACE DISC IN DRIVE 2:  INPUT NAME OF DATA FILE",Dfile$
1820  MASS STORAGE IS ":CS80,700,1"
1830  ASSIGN @Readf TO Dfile$
1840  ENTER @Readf;V21,Epsilon
1850  ENTER @Readf;Volt1(*),Volt2(*),Volt4(*)
1860  MASS STORAGE IS ":CS80,700,0"
1870  !*****************************************
1880  !
1890  ! COMPUTE Va(Ik) : COMPENSATED COLD-WIRE VOLTAGE
1900  INPUT "INPUT ACQUISITION FREQUENCY (HZ)",Freq
1910  Vmax=Volt1(1)
1920  Vmin=Volt1(1)
1930  Ndat=1000
1940  FOR Ik=1 TO Ndat
1950    IF Volt1(Ik)>Vmax THEN
1960      Vmax=Volt1(Ik)
1970    END IF
1980    IF Volt1(Ik)<Vmin THEN
1990      Vmin=Volt1(Ik)
2000    END IF
2010  NEXT Ik
2020  INPUT "INPUT K(=k2*h01/h02)",Kcc
2030  FOR Ik=1 TO Ndat
2040    Numer=Kcc/Volt4(Ik)/Volt4(Ik)*V21*Volt2(Ik)+Volt1(Ik)
2050    Denom=1+Epsilon*Kcc/Volt4(Ik)/Volt4(Ik)*Volt2(Ik)
2060    Va(Ik)=Numer/Denom
2070  NEXT Ik
2080  !
2090  ! PLOT DATA
2100  CALL Plot_lin(Volt1(*),Va(*),Ndat,Freq,Vmin,Vmax,Kcc)
2110  !
2120  INPUT "DO YOU WISH TO TRY ANOTHER VALUE OF K ? (Y/N)",Tryk$
```

```
2130  IF Tryk$="N" THEN STOP
2140  GOTO 2020
2150  !****************************************
2160  end
2170  !*************************************************************************
2180  !
2190  !
2200  !*************************************************************************
2210  sub Plot_lin(Volt1(*),Va(*),Ndat,Freq,Vmin,Vmax,Kcc)
2220  !****************************************
2230  !
2240    OPTION BASE 1
2250    DIM Xd(500),Yd(500),Title$[50],Labelx$[50],Labely$[50]! ARRAY TO BE PLOT
TED
2260    GRAPHICS ON
2270    GCLEAR
2280    GINIT
2290    LORG 5
2300    DEG
2310    !****************************************
2320    Title$="COMPENSATED vs. UNCOMPENSATED VOLTAGES"     ! TITLE OF PLOT
2330    Xmin=500*(1/Freq)*1000 ! MINIMUM VALUE OF X
2340    Xmax=650*(1/Freq)*1000 ! MAXIMUM VALUE OF X
2350    Xtic=(Xmax-Xmin)/15  ! SMALL SCALE
2360    Nxtic=2  ! HOW MANY SMALL SCALES IN LARGE SCALE
2370    Ymin=DROUND(Vmin*1000,1)-1
2380    Ymax=DROUND(Vmax*1000,1)+1
2390    Ymax=15
2400    Ymin=3
2410    Ytic=(Ymax-Ymin)/24
2420    Nytic=4
2430    Lab$="Y"! WANT LABEL
2440    Labelx$="TIME [mS]"                  ! X-AXIS LABEL
2450    Labely$="VOLTS [V] X 1000"           ! Y-AXIS LABEL
2460    N=1000! NUMBER OF DATA POINTS DO YOU WISH TO PLOT
2470    Nc=2 ! NUMBER OF CURVES DO YOU WISH TO PLOT
2480    Expand$="N"! EXPANDED GRAPHICS PRINT MODE?
2490  !*************************************************************************
2500  ! LABELS
2510    LDIR 0
2520    CSIZE 6
2530    LORG 5
2540    FOR I=-.1 TO .3 STEP .1
2550      MOVE 70+I,95
2560      LABEL Title$
2570    NEXT I
2580    CSIZE 5
2590    LORG 5
2600    MOVE 69,5
2610    LABEL Labelx$
2620    LDIR 90
2630    MOVE 6,52
2640    LABEL Labely$
2650    VIEWPORT 15,124,12,90
2660  !*********************************************************
```

```
2670  ! LINEAR-LINEAR AXES
2680    WINDOW Xmin,Xmax,Ymin,Ymax
2690    AXES Xtic,Ytic,Xmin,Ymin,Nxtic,Nytic,5
2700    AXES Xtic,Ytic,Xmax,Ymax,Nxtic,Nytic,5
2710  !
2720    CLIP OFF
2730    LDIR 0
2740    IF Lab$="N" THEN GOTO 2950
2750    Ylab=(Ymax-Ymin)/20
2760    FOR I=1 TO (Xmax-Xmin)/(Xtic*Nxtic)
2770      X1=I*Xtic*Nxtic+Xmin
2780      MOVE X1,Ymin
2790      LORG 6
2800      LABEL X1
2810    NEXT I
2820    !
2830    Xlab=(Xmax-Xmin)/25
2840    LDIR 90
2850    FOR I=1 TO (Ymax-Ymin)/(Ytic*Nytic)
2860      Y1=I*Ytic*Nytic+Ymin
2870      MOVE -Xlab+Xmin,Y1
2880      IF ABS(Y1)<1.E-10 THEN GOTO 2900
2890      LABEL Y1
2900      IF ABS(Y1)<1.E-10 THEN LABEL "0"
2910    NEXT I
2920    LDIR 0
2930  !*************************************************************************
2940  ! PLOT DATA ENTERED MANUALLY
2950    CLIP ON
2960    LORG 5
2970    CSIZE 4,.5
2980    FOR J=1 TO Nc
2990      IF J=1 THEN
3000        LINE TYPE 1
3010      ELSE
3020        LINE TYPE 4
3030      END IF
3040      FOR I=500 TO 650
3050        IF J=1 THEN
3060          MOVE I*(1/Freq)*1000,Volt1(I)*1000
3070          DRAW (I+1)*(1/Freq)*1000,Volt1(I+1)*1000
3080          DISP I,Volt1(I)
3090        END IF
3100        IF J=2 THEN
3110          MOVE I*(1/Freq)*1000,Va(I)*1000
3120          DRAW (I+1)*(1/Freq)*1000,Va(I)*1000
3130        END IF
3140      NEXT I
3150    NEXT J
3160    !
3170    LINE TYPE 1
3180    MOVE 5.8,12
3190    kc$=VAL$(Kcc)
3200    Lab$="KCC= "&kc$
3210    LABEL Lab$
```

```
3220  !*************************************************************************
3230    INPUT "DO YOU WISH A HARD COPY? (Y OR N)",A5$
3240    IF A5$="Y" THEN
3250      IF Expand$="Y" THEN
3260        DUMP DEVICE IS 701,EXPANDED
3270        DUMP GRAPHICS
3280      END IF
3290      IF Expand$="N" THEN DUMP GRAPHICS 1 TO #701
3300      OUTPUT 701;"
                     "
3310    END IF
3320    GCLEAR
3330  SUBEND
3340  !*************************************************************************
```

```
10    !*************************************************************************
20    ! THIS PROGRAM IS USED TO ACQUIRE U'T' DATA IN BOUNDARY LAYERS (UTACQ)
30    !*************************************************************************
40    !
50    DIM Volt1(4100),Volt2(4100),Volt3(4100),Volt4(4100)
60    DIM A$[8704] BUFFER,B$[8704] BUFFER,C$[8704] BUFFER,D$[8704] BUFFER
70    DIM F$[300],Ce>p$[300],Com$[180]
80    ASSIGN @Prowler1 TO 715
90    ASSIGN @Prowler2 TO 716
100   !*****************************************
110   !
120   ! SET UP NORLAND PROWLERS
130   INPUT "DO YOU WISH EQUIPTMENT SETUP DETAILS ?",Eqptset$
140   IF Eqptset$="Y" THEN
150     PRINT USING "/,""PROWLER SETUP (ALL CHANNELS):"""
160     PRINT " MODE : TRIGGERED HOLD"
170     PRINT " RANGE : MINIMIZE"
180     PRINT " BIAS : 0"
190     PRINT " COUPLING : DC"
200     PRINT USING "/,"" TRIGGER SOURCE : EXTERNAL"""
210     PRINT USING """ DELAY : 4096"",/"
220     PRINT "CHANNEL ASSIGNMENTS :"
230     PRINT USING "/,"" IFA 100 :"""
240     PRINT "  CHANNEL 1 ON IFA 100 : FROM HOT-WIRE (WIRE NO. 1)"
250     PRINT "    OFFSET = 1 V, GAIN = 10, FILTER = 5000 HZ"
260     PRINT "  CHANNEL 2 ON IFA 100 : FROM HOT-WIRE (WIRE NO. 3)"
270     PRINT "    OFFSET = 1 V, GAIN = 10, FILTER = 5000 HZ"
280     PRINT "  CHANNEL 3 ON IFA 100 : FROM AMPLIFIER OUTPUT OF COLD-WIRE (WIRE
 NO. 2)"
290     PRINT "    OFFSET = VARIABLE (PROBABLY 5 V), GAIN = 1, FILTER = 5000 HZ"
300     PRINT "  CHANNEL 4 ON IFA 100 : FROM DERIVATIVE OF COLD-WIRE SIGNAL"
310     PRINT "    OFFSET=0, GAIN = 1, FILTER = 2000 HZ"
320     PRINT USING "/,"" NORLAND (716) :"""
330     PRINT "  CHANNEL A : FROM CHANNEL 3 OF IFA 100"
340     PRINT "  CHANNEL B : FROM CHANNEL 4 OF IFA 100"
350     PRINT USING "/,"" NORLAND (715):"""
360     PRINT "  CHANNEL A : FROM CHANNEL 1 OF IFA 100"
370     PRINT USING """  CHANNEL B : FROM CHANNEL 2 OF IFA 100"",2/"
380   END IF
390   !*****************************************
400   !
410   ! SETUP PARAMETERS FOR CIRCUIT/SIGNAL CONDITIONERS/SIGNAL PROCESSING
420   ! CONSTANT CURRENT CIRCUIT :
430   Ccgain=200.         ! GAIN OF AMPLIFIER
440   Ccoff=0.            ! OFFSET OF AMPLIFIER
450   Cctc=-.00130        ! TIME CONSTANT OF DIFFERENTIATOR (RC PRODUCT):  THIS IS
NOT CORRECT, BUT IS OK.  THE ERROR HAS BEEN COMPENSATED FOR IN Kcc.
460   Current=1.000E-3 ! CURRENT THROUGH WIRE [A]
470   !
480   ! IFA 100 CHANNEL 1 : WIRE NO. 1
490   Ifa1off=1.          ! OFFSET OF HOT-WIRE BRIDGE
500   Ifa1gain=10.        ! GAIN OF HOT-WIRE BRIDGE
510   !
520   ! IFA 100 CHANNEL 2 : WIRE NO. 3
530   Ifa2off=1.          ! OFFSET OF HOT-WIRE BRIDGE
```

```
540   Ifa2gain=10.      ! GAIN OF HOT-WIRE BRIDGE
550   !
560   ! IFA 100 CHANNEL 3 :
570   Ifa3off=10.7      ! OFFSET OF COLD-WIRE BRIDGE
580   Ifa3gain=1.       ! GAIN OF COLD-WIRE BRIDGE
590   !
600   ! SIGNAL PROCESSING :
610   Epsilon=.0855     ! (COLD RES. OF HOT-WIRE)/(COLD RES. OF COLD-WIRE)
620   V21=1.0E-3*7.70   ! V21=(COLD-WIRE CURRENT)*(HOT-WIRE RESISTANCE)
630   Kcc=.10           ! K2*H01*H02 (FROM CALIBRATION)--FIND REAL VALUE IN VTRED
640   !
650   ! WIRE RESISTANCE/TEMPERATURE CHARACTERISTICS
660   Dtdr=5.56586      ! SLOPE OF TEMP. vs. RESISTANCE CURVE
670   R0=-263.042-3.46  ! OFFSET OF TEMP. vs. RESISTANCE CURVE
                          UPDATED (4/25/89)
680   !
690   ! HOT-WIRE CALIBRATION COEFFICIENTS
700   Theta=PI/4.       ! ANGLE BETWEEN WIRES AND FLOW WHEN ALIGNED WITH FLOW
710   ! WIRE 1 DATA :   ! UPDATED 4/19/89
720   A1=-2.470847
730   B1=8.73329
740   Power1=.435
750   Tw1=250.
760   !
770   ! WIRE 2 DATA :
780   A2=-2.764756
790   B2=8.260559
800   Power2=.435
810   Tw2=250.
820   !
830   INPUT "ARE THE SETUP PARAMETERS FOR THE CIRCUIT/SIG. COND.S/SIG. PROC. COR
RECT ? (Y/N)",Setupp$
840   !*****************************************
850   !
860   INPUT "INPUT OFFSET FOR CH. A AND CH. B FOR PROWLER 715",Off3,Off4
870   INPUT "INPUT OFFSET FOR CH. A AND CH. B FOR PROWLER 716",Off1,Off2
880   INPUT "INPUT BASE FILE NAME (e.g., VT0804)",File$
890   INPUT "INPUT Y0 [cm]",Y0
900   PRINT " MAXIMUM NUMBER OF PROFILE POINTS : 14  ( DO NOT EXCEED !! )"
910   PRINT USING "2/,"" DATA POINT: "",#"
920   !
930   ! STORE CIRCUIT/WIRE/SIG. COND. PARAMETERS
940   MASS STORAGE IS ":CS80,700,1"
950   File$=File$&"_P"
960   CREATE BDAT File$,2
970   ASSIGN @Ppath TO File$
980   OUTPUT @Ppath;Ccgain,Ccoff,Cctc,Current,Ifa1off,Ifa1gain,Ifa2off,Ifa2gain,
Ifa3off,Ifa3gain,Epsilon,V21,Kcc,Dtdr,R0,Theta,Tw1,Tw2,Off1,Off2,Off3,Off4
990   OUTPUT @Ppath;Power1,Power2,A1,B1,A2,B2
1000  MASS STORAGE IS ":CS80,700,0"
1010  !
1020  ! TAKE DATA
1030  FOR Idata=1 TO 50
1040    PRINT USING "3X,2D,#";Idata
1050    ! CREATE DATA FILES
```

```
1060    INPUT "START ACQUIRING DATA !!",Inp$
1070    INPUT "INPUT Y [cm]",Yp
1080    Y=Y0-Yp+.05
1090    MASS STORAGE IS ":CS80,700,1"
1100    !
1110    Point$=VAL$(Idata)
1120    File1$=Fileb$&"_A"&Point$
1130    File2$=Fileb$&"_B"&Point$
1140    File3$=Fileb$&"_C"&Point$
1150    File4$=Fileb$&"_D"&Point$
1160    Filey$=Fileb$&"_Y"&Point$
1170    !
1180    CREATE BDAT File1$,35
1190    CREATE BDAT File2$,35
1200    CREATE BDAT File3$,35
1210    CREATE BDAT File4$,35
1220    CREATE BDAT Filey$,1
1230    !
1240    ASSIGN @Diska TO File1$
1250    ASSIGN @Diskb TO File2$
1260    ASSIGN @Diskc TO File3$
1270    ASSIGN @Diskd TO File4$
1280    ASSIGN @Ypath TO Filey$
1290    !
1300    ASSIGN @Buffa TO BUFFER A$
1310    ASSIGN @Buffb TO BUFFER B$
1320    ASSIGN @Buffc TO BUFFER C$
1330    ASSIGN @Buffd TO BUFFER D$
1340    !
1350    OUTPUT @Ypath;Y
1360    INPUT "PRESS [ENTER] WHEN FINISHED ACQUIRING DATA !!",Inp$
1370    !
1380    ! INITIATE DATA TRANSFER
1390    ! TRANSFER ARRAY A[1/1] AND B[1/1] FROM PROWLER UNIT #15, THEN FROM
          PROWLER UNIT #16
1400    FOR J=1 TO 4
1410      IF J=1 THEN
1420        OUTPUT 716 USING "#,K";"S"
1430        WAIT 1.
1440        OUTPUT 716 USING "#,K";"_KCGA" ! CONTENTS OF CH. A, UNIT 16
1450        WAIT 1.
1460        TRANSFER @Prowler2 TO @Buffa;COUNT 8452
1470        TRANSFER @Buffa TO @Diska;COUNT 8452
1480        WAIT .5
1490      END IF
1500      IF J=2 THEN
1510        OUTPUT 716 USING "#,K";"_KCGC" ! CONTENTS OF CH. B, UNIT 16
1520        WAIT 1.
1530        TRANSFER @Prowler2 TO @Buffb;COUNT 8452
1540        TRANSFER @Buffb TO @Diskb;COUNT 8452
1550        WAIT .5
1560      END IF
1570      IF J=3 THEN
1580        OUTPUT 715 USING "#,K";"_KCGA" ! CONTENTS OF CH. A, UNIT 15
1590        WAIT 1.
```

```
1600          TRANSFER @Prowler1 TO @Buffc;COUNT 8452
1610          TRANSFER @Buffc TO @Diskc;COUNT 8452
1620          WAIT .5
1630        END IF
1640        IF J=4 THEN
1650          OUTPUT 715 USING "#,K";"_KCGC" ! CONTENTS OF CH. B, UNIT 15
1660          WAIT 1.
1670          TRANSFER @Prowler1 TO @Buffd;COUNT 8452
1680          TRANSFER @Buffd TO @Diskd;COUNT 8452
1690          WAIT .5
1700        END IF
1710      NEXT J
1720      MASS STORAGE IS ":CS80,700,0"
1730      Counter=Idata
1740      INPUT "DO YOU WISH TO CONTINUE ? (Y/N)",Cont$
1750      IF Cont$="N" THEN 1780
1760    NEXT Idata
1770    !
1780    ! STORE COUNTER NUMBER (NUMBER OF DATA PROFILE POINTS)
1790    MASS STORAGE IS ":CS80,700,1"
1800    File1$=File$&"_CT"
1810    CREATE BDAT File1$,1
1820    ASSIGN @Cpath TO File1$
1830    OUTPUT @Cpath;Counter
1840    MASS STORAGE IS ":CS80,700,0"
1850    !****************************************
1860    !
1870    END
```

```
10    !*************************************************************************
20    ! THIS PROGRAM IS USED TO REDUCE v't' DATA TAKEN BY VTACQ (I_VTRED)
30    !*************************************************************************
40    !
50    DIM Volt1(4100),Volt2(4100),Volt3(4100),Volt4(4100)
60    DIM Y(20),Um(20),Vm(20),Tm(20),Uprm(20),Vprm(20),Tprm(20),Upvpm(20),Uptpm(
20),Vptpm(20),Upvp2m(20),Vp2tpm(20)
70    DIM Y(20),U1(20),V1(20),T1(20),Upr1(20),Vpr1(20),Tpr1(20),Upvp1(20),Uptp1(
20),Vptp1(20),Upvp21(20),Vp2tp1(20)
80    DIM Y(20),Ut(20),Vt(20),Tt(20),Uprt(20),Vprt(20),Tprt(20),Upvpt(20),Uptpt(
20),Vptpt(20),Upvp2t(20),Vp2tpt(20)
90    DIM Tpnondim(20),Ynondim(20),Prt(20),Dudy(20),Dtdy(20),Co(20),Yk(20)
100   DIM Ynd(20),Upvpnd(20),Uptpnd(20),Vptpnd(20),Upvp2nd(20),Vp2tpnd(20)
110   DIM A$[8704] BUFFER,B$[8704] BUFFER,C$[8704] BUFFER,D$[8704] BUFFER
120   DIM F$[300],Cexp$[300],Com$[180],Inter(20)
130   !*****************************************
140   !
150   !
160   INPUT "DO YOU WISH TO 1). REDUCE RAW VOLTAGES OR 2). REDUCE DATA TO NONDIM
. FORM ? ",Datared
170   IF Datared=2 THEN 4310
180   INPUT "INPUT FILE BASE NAME (e.g., VT0804)",Fileb$
190   INPUT "INPUT WALL TO FREE-STREAM TEMPERATURE DIFFERENCE [C] AT THIS STATIO
N",Deltat
200   INPUT "INPUT MOMENTUM BOUNDARY LAYER THICKNESS [cm] AT THIS STATION",Delta
m
210   MASS STORAGE IS ":CS80,700,1"
220   !
230   ! ENTER NUMBER OF PROFILE POINTS FROM DISK
240   Filect$=Fileb$&"_CT"
250   ASSIGN @Cpath TO Filect$
260   ENTER @Cpath;Ndata
270   !
280   ! ENTER CIRCUIT/WIRE/SIG. COND. PARAMETERS FROM DISK
290   Filep$=Fileb$&"_P"
300   ASSIGN @Ppath TO Filep$
310   ENTER @Ppath;Cogain,Ccoff,Cctc,Current,Ifaloff,Ifalgain,Ifa2off,Ifa2gain,I
fa3off,Ifa3gain,Epsilon,V21,Kcc,Dtdr,R0,Theta,Tw1,Tw2,Off1,Off2,Off3,Off4
320   ENTER @Ppath;Power1,Power2,Aw1,Bw1,Aw2,Bw2,Thresh,Off_turb,Off_lam
330   R0=R0-2*3.46
340   C2the=2*COS(Theta)
350   S2the=2*SIN(Theta)
360   !
370   ! CORRECTION FOR LONGITUDINAL COOLING OF SENSORS
380   Ld=200                              ! l/d RATIO OF SENSOR
390   Kt=-5.E-4*Ld+.3                     ! Kt, AS DEFINED BY CHAMPAGNE
400   Cfuv=(1+Kt*Kt)/(1-Kt*Kt)            ! CORRECTION FACTOR FOR u'v' MEASUREMENTS
410   Cfv=(1+Kt*Kt)/(1-3*Kt^2+4*Kt^4)     ! CORRECTION FACTOR FOR v' MEASUREMENTS
420   !
430   PRINT USING "/,"" N       Y      U        V       T       u'     v'     t'      u'
v'      u't'    v't'""
440   PRINT USING """       u'v'2       v'2t'"",/"
450   !
460   FOR Idata=1 TO Ndata
470     MASS STORAGE IS ":CS80,700,1"
```

```
480     !
490     ! ENTER RAW DATA FROM DISK
500     !
510     Point$=VAL$(Idata)
520     File1$=Fileb$&"_A"&Point$
530     File2$=Fileb$&"_B"&Point$
540     File3$=Fileb$&"_C"&Point$
550     File4$=Fileb$&"_D"&Point$
560     Filey$=Fileb$&"_Y"&Point$
570     !
580     ASSIGN @Diska TO File1$
590     ASSIGN @Diskb TO File2$
600     ASSIGN @Diskc TO File3$
610     ASSIGN @Diskd TO File4$
620     ASSIGN @Ypath TO Filey$
630     !
640     ASSIGN @Buffa TO BUFFER A$
650     ASSIGN @Buffb TO BUFFER B$
660     ASSIGN @Buffc TO BUFFER C$
670     ASSIGN @Buffd TO BUFFER D$
680     !
690     ! ENTER Y [cm]
700     ENTER @Ypath;Y(Idata)
710     !
720     FOR J=1 TO 4
730       IF J=1 THEN TRANSFER @Diska TO @Buffa;COUNT 8452
740       IF J=2 THEN TRANSFER @Diskb TO @Buffb;COUNT 8452
750       IF J=3 THEN TRANSFER @Diskc TO @Buffc;COUNT 8452
760       IF J=4 THEN TRANSFER @Diskd TO @Buffd;COUNT 8452
770       WAIT 1.
780     NEXT J
790     MASS STORAGE IS ":CS80,700,0"
800     !
810     ! RE-SET BUFFER POINTERS
820     CONTROL @Buffa,5;1
830     WAIT 1.
840     CONTROL @Buffb,5;1
850     WAIT 1.
860     CONTROL @Buffc,5;1
870     WAIT 1.
880     CONTROL @Buffd,5;1
890     WAIT 1.
900     !*****************************************************
910     !
920     ! COMPUTE : EXPONENT AND OFFSET
930     FOR K=1 TO 4
940       FOR J=1 TO 2
950         IF K=1 THEN ENTER @Buffa USING "#,2A";Cexp$
960         IF K=2 THEN ENTER @Buffb USING "#,2A";Cexp$
970         IF K=3 THEN ENTER @Buffc USING "#,2A";Cexp$
980         IF K=4 THEN ENTER @Buffd USING "#,2A";Cexp$
990         V1=IVAL(Cexp$,16)
1000        Exp=2^(V1-128)
1010        Su=.5
1020        Powerk=4.
```

```
1030        FOR K5=1 TO 6
1040          IF K=1 THEN ENTER @Buffa USING "#,A";F$
1050          IF K=2 THEN ENTER @Buffb USING "#,A";F$
1060          IF K=3 THEN ENTER @Buffc USING "#,A";F$
1070          IF K=4 THEN ENTER @Buffd USING "#,A";F$
1080          V1=IVAL(F$,16)
1090          Tot=V1/2^Powerk
1100          Powerk=Powerk+4.
1110          Su=Su+Tot
1120        NEXT K5
1130        IF J=1 THEN
1140          IF K=1 THEN Factor1=Su*Exp
1150          IF K=2 THEN Factor2=Su*Exp
1160          IF K=3 THEN Factor3=Su*Exp
1170          IF K=4 THEN Factor4=Su*Exp
1180        END IF
1190        IF J=2 THEN
1200          IF K=1 THEN Offset1=Su*Exp
1210          IF K=2 THEN Offset2=Su*Exp
1220          IF K=3 THEN Offset3=Su*Exp
1230          IF K=4 THEN Offset4=Su*Exp
1240        END IF
1250      NEXT J
1260      IF K=1 THEN ENTER @Buffa USING "#,240A";F$
1270      IF K=2 THEN ENTER @Buffb USING "#,240A";F$
1280      IF K=3 THEN ENTER @Buffc USING "#,240A";F$
1290      IF K=4 THEN ENTER @Buffd USING "#,240A";F$
1300    NEXT K
1310    !****************************************
1320    !
1330    ! INITIALIZE SUMS
1340    S1=0.
1350    S2=0.
1360    S3=0.
1370    S4=0.
1380    S5=0.
1390    S6=0.
1400    S7=0.
1410    S8=0.
1420    S9=0.
1430    S10=0.
1440    S11=0.
1450    S12=0.
1460    S13=0.
1470    S14=0.
1480    N=0.
1490    !
1500    S1t=0.
1510    S2t=0.
1520    S3t=0.
1530    S4t=0.
1540    S5t=0.
1550    S6t=0.
1560    S7t=0.
1570    S8t=0.
```

```
1580    S9t=0.
1590    S10t=0.
1600    S11t=0.
1610    S12t=0.
1620    S13t=0.
1630    S14t=0.
1640    Nt=0.
1650    !************************************
1660    !
1670    ! COMPUTE : VOLTAGES FROM PROWLERS
1680    !
1690    Ndata=2000
1700    Sumturb=0.
1710    Sumlamb=0.
1720    FOR Ik=1 TO Ndata
1730      FOR K=1 TO 4
1740        IF K=1 THEN
1750          ENTER @Buffa USING "#,B";A1
1760          ENTER @Buffa USING "#,B";A2
1770          ENTER @Buffa USING "#,B";Jk ! ENTER AND IGNORE ALTERNATE POINTS
1780          ENTER @Buffa USING "#,B";Jk
1790        END IF
1800        IF K=2 THEN
1810          ENTER @Buffb USING "#,B";A1
1820          ENTER @Buffb USING "#,B";A2
1830          ENTER @Buffb USING "#,B";Jk
1840          ENTER @Buffb USING "#,B";Jk
1850        END IF
1860        IF K=3 THEN
1870          ENTER @Buffc USING "#,B";A1
1880          ENTER @Buffc USING "#,B";A2
1890          ENTER @Buffc USING "#,B";Jk
1900          ENTER @Buffc USING "#,B";Jk
1910        END IF
1920        IF K=4 THEN
1930          ENTER @Buffd USING "#,B";A1
1940          ENTER @Buffd USING "#,B";A2
1950          ENTER @Buffd USING "#,B";Jk
1960          ENTER @Buffd USING "#,B";Jk
1970        END IF
1980        V1=A2*256+A1-32768
1990        IF K=1 THEN Ew1=(V1*Factor1+Offset1)
2000        IF K=2 THEN Ew2=(V1*Factor2+Offset2)
2010        IF K=3 THEN Ew3=(V1*Factor3+Offset3)
2020        IF K=4 THEN Ew4=(V1*Factor4+Offset4)
2030      NEXT K
2040      !
2050      Volt1(Ik)=Ew1-Off1   ! PROWLER 716 CH. A VOLT. (COLD-WIRE VOLTAGE)
2060      Volt2(Ik)=Ew2-Off2   ! PROWLER 716 CH. B VOLT. (COLD-WIRE DERIVATIVE)
2070      Volt3(Ik)=Ew3-Off3   ! PROWLER 715 CH. A VOLT. (HOT-WIRE VOLTAGE - W1)
2080      Volt4(Ik)=Ew4-Off4   ! PROWLER 715 CH. B VOLT. (HOT-WIRE VOLTAGE - W2)
2090      !************************************
2100      !
2110      ! COMPUTE : DETERMINE FLOW REGIME AND CORRECT HW VOLTAGE
2120      IF Volt3(Ik)>Thresh THEN
```

```
2130        Volt3(Ik)=Volt3(Ik)-Off_turb ! SUBTRACT VOLT. ADDED TO TURB. FLOW
2140        Flag_r$="T"
2150      ELSE
2160        Volt3(Ik)=Volt3(Ik)-Off_lam  ! SUBTRACT VOLT. ADDED TO LAM. FLOW
2170        Flag_r$="L"
2180      END IF
2190      !
2200      ! COMPUTE : V2,DV2/DT,V3
2210      !
2220      ! V1 : COLD-WIRE SIGNAL AFTER AMPLIFICATION, CONDITIONING
2230      Volt1(Ik)=Volt1(Ik)/Ifa3gain+Ifa3off ! DE-CONDITION SIGNAL
2240      Volt1(Ik)=(Volt1(Ik)-Ccoff)/Ccgain   ! UN-DO AMPLIFICATION
2250      !
2260      ! VOLT2 : COLD-WIRE SIGNAL AFTER AMPLIFICATION, FILTERING, AND
                    DIFFERENTIATION.
2270      Volt2(Ik)=Volt2(Ik)/Cctc             ! DIVIDE BY TIME CONSTANT OF
                                                 DIFFERENTIATOR
2280      Volt2(Ik)=Volt2(Ik)/Ccgain           ! DIVIDE BY AMPLIFICATION FACTOR
2290      !
2300      ! V3: HOT-WIRE SIGNAL AFTER CONDITIONING : WIRE 1
2310      Volt3(Ik)=Volt3(Ik)/Ifa1gain+Ifa1off ! DE-CONDITION SIGNAL
2320      !
2330      ! V4: HOT-WIRE SIGNAL AFTER CONDITIONING : WIRE 3
2340      Volt4(Ik)=Volt4(Ik)/Ifa2gain+Ifa2off ! DE-CONDITION SIGNAL
2350      !*****************************************
2360      !
2370      ! COMPUTE : COMPENSATED COLD-WIRE VOLTAGE, TEMPERATURE OF FLOW
2380      Numer=Kcc/Volt4(Ik)/Volt4(Ik)*V21*Volt2(Ik)+Volt1(Ik)
2390      Denom=1+Epsilon*Kcc/Volt4(Ik)/Volt4(Ik)*Volt2(Ik)
2400      Va=Numer/Denom               ! CORRECTED VOLTAGE
2410      Rwire=Va/Current             ! RESISTANCE OF WIRE
2420      Temp=Rwire*Dtdr+R0           ! TEMPERATURE OF WIRE/FLOW
2430      !
2440      ! COMPUTE : VELOCITIES
2450      Ctemp=SQR(225./(250-Temp))   ! CORRECTION FACTOR FOR TEMPERATURE
2460      Volt3(Ik)=Volt3(Ik)*Ctemp
2470      Volt4(Ik)=Volt4(Ik)*Ctemp
2480      !
2490      Ueffw1=(Aw1+Bw1*Volt3(Ik)*Volt3(Ik))^(1/Power1)  ! EFFECTIVE VELOCITY
2500      Ueffw2=(Aw2+Bw2*Volt4(Ik)*Volt4(Ik))^(1/Power2)
2510      Up=(Ueffw1+Ueffw2)/C2the     ! INSTANTANEOUS U VELOCITY
2520      Vp=(Ueffw1-Ueffw2)/S2the     ! INSTANTANEOUS V VELOCITY
2530      !
2540      ! COMPUTE : SUMS
2550      IF Flag_r$="L" THEN
2560        S11=S11+Up*Vp
2570        S21=S21+Vp*Temp
2580        S31=S31+Up*Temp
2590        !
2600        S41=S41+Up*Up
2610        S51=S51+Vp*Vp
2620        S61=S61+Temp*Temp
2630        !
2640        S71=S71+Up
2650        S81=S81+Vp
```

```
2660          S91=S91+Temp
2670          !
2680          S101=S101+Up*Vp*Vp
2690          S111=S111+Up*Up*Vp
2700          S121=S121+Vp*Vp*Vp
2710          S131=S131+Temp*Vp*Vp
2720          S141=S141+Temp*Temp*Vp
2730          !
2740          N1=N1+1
2750        END IF
2760        !
2770        IF Flag_r$="T" THEN
2780          S1t=S1t+Up*Vp
2790          S2t=S2t+Vp*Temp
2800          S3t=S3t+Up*Temp
2810          !
2820          S4t=S4t+Up*Up
2830          S5t=S5t+Vp*Vp
2840          S6t=S6t+Temp*Temp
2850          !
2860          S7t=S7t+Up
2870          S8t=S8t+Vp
2880          S9t=S9t+Temp
2890          !
2900          S10t=S10t+Up*Vp*Vp
2910          S11t=S11t+Up*Up*Vp
2920          S12t=S12t+Vp*Vp*Vp
2930          S13t=S13t+Temp*Vp*Vp
2940          S14t=S14t+Temp*Temp*Vp
2950          !
2960          Nt=Nt+1
2970        END IF
2980        !
2990        IF INT(Ik/100)=Ik/100 THEN DISP USING """Ik, TEMP, U, V: "",4D,5X,3D.2
D,5X,9D.2D,5X,9D.2D";Ik,Temp,Up,Vp
3000      NEXT Ik
3010      !****************************************
3020      !
3030      S1m=S11+S1t
3040      S2m=S21+S2t
3050      S3m=S31+S3t
3060      S4m=S41+S4t
3070      S5m=S51+S5t
3080      S6m=S61+S6t
3090      S7m=S71+S7t
3100      S8m=S81+S8t
3110      S9m=S91+S9t
3120      S10m=S101+S10t
3130      S11m=S111+S11t
3140      S12m=S121+S12t
3150      S13m=S131+S13t
3160      S14m=S141+S14t
3170      !
3180      ! COMPUTE : INTERMITTENCY
3190      Inter(Idata)=Nt/(N1+Nt)
```

```
3200    !
3210    ! COMPUTE : TURBULENCE QUANTITIES
3220    !
3230    ! AVERAGE OF VELOCITY AND TEMPERATURE
3240    Um(Idata)=S7m/Ndata
3250    Vm(Idata)=S8m/Ndata
3260    Um(Idata)=S7m/Ndata
3270    !
3280    Ul(Idata)=S7l/Ndata
3290    Vl(Idata)=S8l/Ndata
3300    Tl(Idata)=S9l/Ndata
3310    !
3320    Ut(Idata)=S7t/Ndata
3330    Vt(Idata)=S8t/Ndata
3340    Ut(Idata)=S7t/Ndata
3350    !
3360    ! RMS OF VELOCITY AND TEMPERATURE
3370    Uprm(Idata)=SQR(S4m/(Nm-1)-S7m*S7m/Nm/(Nm-1))
3380    Vprm(Idata)=SQR((S5m/(Nm-1)-S8m*S8m/Nm/(Nm-1))*Cfv)
3390    Tprm(Idata)=SQR(S6m/(Nm-1)-S9m*S9m/Nm/(Nm-1))
3400    !
3410    IF Nl=0 OR Nl=1 THEN
3420      Uprl(Idata)=0.
3430      Vprl(Idata)=0.
3440      Tprl(Idata)=0.
3450      GOTO 3510
3460    END IF
3470    Uprl(Idata)=SQR(S4l/(Nl-1)-S7l*S7l/Nl/(Nl-1))
3480    Vprl(Idata)=SQR((S5l/(Nl-1)-S8l*S8l/Nl/(Nl-1))*Cfv)
3490    Tprl(Idata)=SQR(S6l/(Nl-1)-S9l*S9l/Nl/(Nl-1))
3500    !
3510    IF Nt=0 OR Nt=1 THEN
3520      Uprt(Idata)=0.
3530      Vprt(Idata)=0.
3540      Tprt(Idata)=0.
3550      GOTO 3610
3560    END IF
3570    Uprt(Idata)=SQR(S4t/(Nt-1)-S7t*S7t/Nt/(Nt-1))
3580    Vprt(Idata)=SQR((S5t/(Nt-1)-S8t*S8t/Nt/(Nt-1))*Cfv)
3590    Tprt(Idata)=SQR(S6t/(Nt-1)-S9t*S9t/Nt/(Nt-1))
3600    !
3610    ! CROSS CORRELATIONS
3620    Upvpm(Idata)=(S1m/(Nm-1)-S7m*S8m/Nm/(Nm-1))*Cfuv
3630    Vptpm(Idata)=(S2m/(Nm-1)-S8m*S9m/Nm/(Nm-1))*Cfuv
3640    Uptpm(Idata)=S3m/(Nm-1)-S7m*S9m/Nm/(Nm-1)
3650    !
3660    IF Nl=0 OR Nl=1 THEN
3670      Upvpl(Idata)=0.
3680      Vptpl(Idata)=0.
3690      Uptpl(Idata)=0.
3700      GOTO 3760
3710    END IF
3720    Upvpl(Idata)=(S1l/(Nl-1)-S7l*S8l/Nl/(Nl-1))*Cfuv
3730    Vptpl(Idata)=(S2l/(Nl-1)-S8l*S9l/Nl/(Nl-1))*Cfuv
3740    Uptpl(Idata)=S3l/(Nl-1)-S7l*S9l/Nl/(Nl-1)
```

```
3750    !
3760    IF Nt=0 OR Nt=1 THEN
3770      Upvpt(Idata)=0.
3780      Vptpt(Idata)=0.
3790      Uptpt(Idata)=0.
3800      GOTO 3870
3810    END IF
3820    Upvpt(Idata)=(S1t/(Nt-1)-S7t*S8t/Nt/(Nt-1))*Cfuv
3830    Vptpt(Idata)=(S2t/(Nt-1)-S8t*S9t/Nt/(Nt-1))*Cfuv
3840    Uptpt(Idata)=S3t/(Nt-1)-S7t*S9t/Nt/(Nt-1)
3850    !
3860    ! TRIPLE CORRELATIONS
3870    Upvp2m(Idata)=(S10m/(Nm-1)-2*S8m*S1m/Nm/(Nm-1)-S7m*S5m/Nm/(Nm-1)+2*S7m*S
8m*S8m/Nm/Nm/(Nm-1))*Cfv
3880    Vp2tpm(Idata)=(S13m/(Nm-1)-2*S8m*S2m/Nm/(Nm-1)-S9m*S5m/Nm/(Nm-1)+2*S9m*S
8m*S8m/Nm/Nm/(Nm-1))*Cfv
3890    !
3900    IF Nl=0 OR Nl=1 THEN
3910      Upvp2l(Idata)=0.
3920      Vp2tpl(Idata)=0.
3930      GOTO 3980
3940    END IF
3950    Upvp2l(Idata)=(S10l/(Nl-1)-2*S8l*S1l/Nl/(Nl-1)-S7l*S5l/Nl/(Nl-1)+2*S7l*S
8l*S8l/Nl/Nl/(Nl-1))*Cfv
3960    Vp2tpl(Idata)=(S13l/(Nl-1)-2*S8l*S2l/Nl/(Nl-1)-S9l*S5l/Nl/(Nl-1)+2*S9l*S
8l*S8l/Nl/Nl/(Nl-1))*Cfv
3970    !
3980    IF Nt=0 OR Nt=1 THEN
3990      Upvp2t(Idata)=0.
4000      Vp2tpt(Idata)=0.
4010      GOTO 4050
4020    END IF
4030    Upvp2t(Idata)=(S10t/(Nt-1)-2*S8t*S1t/Nt/(Nt-1)-S7t*S5t/Nt/(Nt-1)+2*S7t*S
8t*S8t/Nt/Nt/(Nt-1))*Cfv
4040    Vp2tpt(Idata)=(S13t/(Nt-1)-2*S8t*S2t/Nt/(Nt-1)-S9t*S5t/Nt/(Nt-1)+2*S9t*S
8t*S8t/Nt/Nt/(Nt-1))*Cfv
4050    !
4060    PRINT USING "2D,3X,D.3D,2X,#";Idata,Y(Idata)
4070    PRINT USING "2D.2D,2X,SD.3D,2X,2D.2D,2X,D.3D,1X,D.3D,1X,D.3D,#";Um(Idata
);Vm(Idata);Tm(Idata);Uprm(Idata),Vprm(Idata),Tprm(Idata)
4080    PRINT USING "2X,SD.3D,2X,SD.3D,1X,SD.3D";Upvpm(Idata),Uptpm(Idata),Vptpm
(Idata)
4090    PRINT USING "5X,SD.4D,2X,SD.4D";Upvp2m(Idata),Vp2tpm(Idata)
4100    !
4110    Counter=Idata
4120  NEXT Idata
4130  BEEP
4140  !*****************************************
4150  !
4160  ! STORE DATA
4170  INPUT "DO YOU WISH TO STORE THE DATA ? (Y/N)",Stored$
4180  IF Stored$="N" THEN 4470
4190  INPUT "PLACE DATA STORAGE DISC IN DRIVE 1 AND INPUT FILENAME ",Filen$
4200  MASS STORAGE IS ":CS80,700,1"
4210  CREATE BDAT Filen$,25
```

```
4220  ASSIGN @Writef TO Filen$
4230  OUTPUT @Writef;Counter,Deltat,Deltam
4240  FOR I=1 TO Counter
4250    OUTPUT @Writef;Y(I),Um(I),Vm(I),Tm(I),Uprm(I),Vprm(I),Tprm(I),Up
ptpm(I),Vptpm(I),Upvp2m(I),Vp2tpm(I)
4260    OUTPUT @Writef;Y(I),Ul(I),Vl(I),Tl(I),Uprl(I),Vprl(I),Tprl(I),Up
ptpl(I),Vptpl(I),Upvp2l(I),Vp2tpl(I)
4270    OUTPUT @Writef;Y(I),Ut(I),Vt(I),Tt(I),Uprt(I),Vprt(I),Tprt(I),Up
ptpt(I),Vptpt(I),Upvp2t(I),Vp2tpt(I)
4280  NEXT I
4290  MASS STORAGE IS ":CS80,700,0"
4300  GOTO 4470
4310  !*****************************************
4320  !
4330  ! INPUT DATA TO BE NON-DIMENSIONALIZED FROM DISC
4340  INPUT "PLACE DISC IN DRIVE 1 AND INPUT DATA FILE NAME !!",Fileb$
4350  MASS STORAGE IS ":CS80,700,1"
4360  ASSIGN @Readf TO Fileb$
4370  INPUT "INPUT Upw [m/S]",Upw
4380  ENTER @Readf;Np,Deltat,Deltam
4390  FOR I=1 TO Np
4400    ENTER @Readf;Y(I),Um(I),Vm(I),Tm(I),Uprm(I),Vprm(I),Tprm(I),Upvp
pm(I),Vptpm(I),Upvp2m(I),Vp2tpm(I)
4410    ENTER @Readf;Y(I),Ul(I),Vl(I),Tl(I),Uprl(I),Vprl(I),Tprl(I),Upvp
pl(I),Vptpl(I),Upvp2l(I),Vp2tpl(I)
4420    ENTER @Readf;Y(I),Ut(I),Vt(I),Tt(I),Uprt(I),Vprt(I),Tprt(I),Upvp
pt(I),Vptpt(I),Upvp2t(I),Vp2tpt(I)
4430  NEXT I
4440  MASS STORAGE IS ":CS80,700,0"
4450  !*****************************************
4460  !
4470  ! COMPUTE : NON-DIMENSIONALIZED DATA
4480  !
4490  ! LOCAL DERIVATIVE OF VELOCITY PROFILE :
4500  CALL Lsqfit(Y(*),U(*),Co(*),Np,3,1,Fileb$)
4510  FOR I=1 TO Np
4520    Dudy(I)=0.
4530    FOR J=2 TO 5+1
4540      Dudy(I)=Dudy(I)+Co(J)*(J-1)*Y(I)^(J-2)
4550    NEXT J
4560  NEXT I
4570  !
4580  ! LOCAL DERIVATIVE OF TEMPERATURE PROFILE :
4590  CALL Lsqfit(Y(*),T(*),Co(*),Np,3,2,Fileb$)
4600  FOR I=1 TO Np
4610    Dtdy(I)=0.
4620    FOR J=2 TO 5+1
4630      Dtdy(I)=Dtdy(I)+Co(J)*(J-1)*Y(I)^(J-2)
4640    NEXT J
4650  NEXT I
4660  !
4670  ! NON-DIMENSIONALIZE DATA :
4680  FOR I=1 TO Np
4690    ! DISTANCE FROM WALL :
4700    Ynd(I)=Y(I)/Deltam
```

```
4710    !
4720    ! SHEAR STRESS
4730    Upvpnd(I)=Upvp(I)/Upw/Upw
4740    !
4750    ! TURBULENT HEAT FLUXES
4760    Uptpnd(I)=Uptp(I)/Upw/Deltat
4770    Vptpnd(I)=Vptp(I)/Upw/Deltat
4780    !
4790    ! TRIPLE PRODUCTS
4800    Upvp2nd(I)=Upvp2(I)/Upw^3
4810    Vp2tpnd(I)=Vp2tp(I)/Upw/Upw/Deltat
4820    !
4830    ! TURBULENT PRANDTL NUMBER
4840    Epsilonm=Upvp(I)/Dudy(I)      ! DIFFUSIVITY OF MOMENTUM
4850    Epsilont=Vptp(I)/Dtdy(I)      ! DIFFUSIVITY OF HEAT
4860    Prt(I)=Epsilonm/Epsilont      ! TURBULENT PRANDTL NUMBER
4870  NEXT I
4880  !*****************************************
4890  !
4900  ! PRINT DATA
4910  !
4920  INPUT "PRINT DATA ON SCREEN OR PRINTER ? (S/P) ",Printer$
4930  IF Printer$="P" THEN PRINTER IS 701
4940  PRINT USING "10A";File$
4950  PRINT USING "2/,""STATION : "",2D,""    ( FLAT WALL, TI=.45%, K=0.0 )""";S
tation
4960  PRINT USING "2/,""Del 99.5 = "",D.3D,"" [cm]"",7X,""Tw-Tinf = "",D.3D,"" [
C]""";Deltam,Deltat
4970  PRINT USING """Upw = "",2D.2D,"" [m/S]"",2/";Upw
4980  PRINT USING """ N        Y        U        V        T        u'        v'
      t'      u'v'"""
4990  PRINT USING """          [cm]    [m/S]    [m/S]    [C]      [m/S]     [m/S]
      [C]    [m2/S2]"",/"
5000  FOR I=1 TO Np
5010    PRINT USING "2D,5X,D.3D,5X,2D.2D,4X,SD.2D,3X,2D.2D,5X,D.3D,5X,D.3D,5X,D.
3D,5X,SD.3D";I,Y(I),U(I),V(I),T(I),Upr(I),Vpr(I),Tpr(I),Upvp(I)
5020    IF INT(I/5)=I/5 THEN PRINT
5030  NEXT I
5040  PRINT USING "2/,"" N      u't'      v't'     u'v'^2       v'^2t'      dU/d
y       dT/dy      Prt"""
5050  PRINT USING """       [m-C/S]   [m-C/S]   [m3/S3]     [m2-C/S2]     [1/S]
    [C/m] "",/"
5060  FOR I=1 TO Np
5070    PRINT USING "2D,3X,SD.3D,5X,SD.3D,5X,SD.3D,5X,SD.4D,5X,3D.3D,5X,3D.3D,5X
,D.3D";I,Uptp(I),Vptp(I),Upvp2(I),Vp2tp(I),Dudy(I),Dtdy(I),Prt(I)
5080    IF INT(I/5)=I/5 THEN PRINT
5090  NEXT I
5100  END
5110  !*************************************************************************
5120  !
5130  !*************************************************************************
5140  !*************************************************************************
5150  SUB Lsqfit(X1(*),Y1(*),Z(*),Np,Mo,Mode,Filen$)
5160    OPTION BASE 1
5170    N=Np    ! NUMBER OF DATA POINTS
```

```
5180    M=Mc+1
5190    ALLOCATE Phi(N,M),Phit(M,N),C(M,M),Xls(N),Yls(N),D(M,M),A1(M,N),Yc(N),E(
N)
5200    FOR I=1 TO N
5210      Yls(I)=Y1(I)
5220      Xls(I)=X1(I)
5230    NEXT I
5240    !
5250    PRINT
5260    ! CONSTRUCT PHI
5270    FOR I=1 TO N
5280      FOR J=1 TO M
5290        Phi(I,J)=Xls(I)^(J-1)
5300      NEXT J
5310    NEXT I
5320    MAT Phit= TRN(Phi)! TRANSPOSE OF PHI
5330    MAT D= Phit*Phi
5340    MAT C= INV(D)
5350    MAT A1= C*Phit
5360    MAT E= A1*Yls
5370    !
5380    IF Mode=1 THEN INPUT "DO YOU WISH A HARD COPY OF THE VELOCITY FIT ? (Y/N
)",Hft$
5390    IF Mode=2 THEN INPUT "DO YOU WISH A HARD COPY OF THE TEMPERATURE FIT ? (
Y/N)",Hft$
5400    IF Hft$="Y" THEN
5410      PRINTER IS 701
5420    ELSE
5430      PRINTER IS 1
5440    END IF
5450    IF Regime=1 THEN PRINT USING """TRANSITIONAL FLOW :"""
5460    IF Regime=2 THEN PRINT USING """LAMINAR FLOW :"""
5470    IF Regime=3 THEN PRINT USING """TURBULENT FLOW :"""
5480    IF Mode=1 THEN PRINT "FILE NAME : ",Filen$
5490    IF Mode=1 THEN PRINT USING "/,50A";"**********************************
********"
5500    IF Mode=1 THEN PRINT USING "/,""U = SUM( A(N) * Y^N )"",/"
5510    IF Mode=2 THEN PRINT USING "/,""T = SUM( A(N) * Y^N )"",/"
5520    FOR I=1 TO 4
5530      PRINT USING """A"",D,""= "",SD.4DESZZ,4X,#";I-1,E(I)
5540      IF I=4 THEN PRINT
5550    NEXT I
5560    FOR I=5 TO 6
5570    ! PRINT USING """A"",D,""= "",SD.4DESZZ,4X,#";I-1,E(I)
5580    !  IF I=6 THEN PRINT USING "2/"
5590    NEXT I
5600    FOR I=1 TO N
5610      Yc(I)=0.
5620      FOR J=1 TO M
5630        Yc(I)=Yc(I)+E(J)*Xls(I)^(J-1)
5640      NEXT J
5650    NEXT I
5660    IF Mode=1 THEN PRINT "     Y          U          UC        % DIFF"
5670    IF Mode=2 THEN PRINT "     Y          T          TC        % DIFF"
5680    FOR I=1 TO N
```

```
5690        IF Yls(I)=0. THEN 5710
5700        PRINT USING "2D.4D,4X,3D.4D,4X,3D.3D, 4X,3D.3D";Xls(I),Yls(I),Yc(I),(Y
c(I)-Yls(I))/Yls(I)*100
5710      NEXT I
5720      PRINT USING "/,50A";"*****************************************"
5730      FOR I=1 TO M
5740        Z(I)=E(I)
5750      NEXT I
5760      IF Mode=2 THEN
5770        IF Hft$="Y" THEN OUTPUT 701;"
5780      END IF
5790      PRINTER IS 1
5800    SUBEND
5810    !*************************************************************************
```

A.5 Data Listing

Case 1:

Mean and fluctuating velocity:	IUP0824
Mean temperature:	T0829, T1125
Stanton number:	ST0829
Shear stress:	IUV0828
Turbulent heat flux and Pr_t:	IVT1210

FILE: IUP082491

STATION: 1

XSTA = .114 [m]
Df = 1.652E-3
Upw = 28.15 [m/S]
Visc = 1.638E-5 [m^2/S]
REx = 1.984E+5
Del995 = 1.406E-3 [m]

DEL1 = +3.890E-4 [m]
DEL2 = +1.547E-4 [m]
H = 2.515
REdel1 = 6.884E+2
REdel2 = +2.657E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.008	2.539	2.97	3.14	.043	.764
2	.009	3.419	3.96	4.23	.057	1.072
3	.010	4.019	4.95	4.97	.071	1.078
4	.011	5.257	6.43	6.50	.093	1.169
5	.016	6.357	7.91	7.87	.114	1.351
6	.021	8.574	10.38	10.60	.149	1.514
7	.026	10.775	12.85	13.32	.185	1.629
8	.031	12.830	15.32	15.86	.221	1.804
9	.035	14.627	17.79	18.08	.255	1.961
10	.041	16.728	20.26	20.67	.292	2.072
11	.046	18.418	22.72	22.76	.327	2.202
12	.051	19.745	25.19	24.40	.363	2.021
13	.055	21.191	27.66	26.19	.398	1.948
14	.059	22.356	30.60	28.91	.488	1.934
15	.076	25.210	37.54	31.16	.540	1.782
16	.086	26.522	42.48	32.78	.612	1.568
17	.093	27.281	47.41	33.47	.693	1.119
18	.103	27.544	52.35	34.04	.754	.859
19	.116	27.763	57.29	34.34	.825	.742
20	.126	27.917	62.23	34.56	.896	.615
21	.141	28.014	69.64	34.62	1.003	.622
22	.156	28.010	77.04	34.62	1.109	.475
23	.176	26.161	86.92	34.63	1.251	.545
24	.206	28.124	101.73	34.76	1.465	.470

FILE: IUP082452

STATION: 2

XSTA = .343 [m]
Cf = 9.570E-4
Upw = 28.28 [m/S]
Visc = 1.642E-5 [m^2/S]
REx = 5.906E+5
Del995 = 2.182E-3 [m]

DEL1 = +6.917E-4 [m]
DEL2 = +2.750E-4 [m]
H = 2.515
REdel1 = 1.191E+3
REdel2 = +4.736E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.011	2.581	4.14	4.17	.050	2.197
2	.013	3.002	4.90	4.85	.060	2.400
3	.015	3.522	5.65	5.69	.069	2.570
4	.017	3.960	6.40	6.40	.078	2.607
5	.020	4.605	7.54	7.44	.092	2.806
6	.023	5.413	8.67	8.75	.105	3.250
7	.028	6.619	10.55	10.70	.128	3.021
8	.033	7.853	12.43	12.70	.151	2.979
9	.038	9.116	14.32	14.74	.174	3.006
10	.043	10.276	16.20	16.61	.197	2.958
11	.053	12.553	19.97	20.29	.243	3.192
12	.063	14.725	23.74	23.80	.289	3.332
13	.073	16.555	27.50	26.76	.335	3.361
14	.088	19.223	33.15	31.07	.403	3.459
15	.103	21.583	38.81	34.89	.472	3.455
16	.118	23.457	44.46	37.92	.541	3.196
17	.133	24.944	50.11	40.32	.610	2.774
18	.153	26.420	57.64	42.71	.701	2.255
19	.173	27.319	65.18	44.16	.793	1.756
20	.203	28.014	76.48	45.29	.931	1.198
21	.233	28.259	87.78	45.68	1.068	.799
22	.273	28.200	102.85	45.59	1.251	.642
23	.323	28.358	121.69	45.84	1.481	.529

FILE: IUP082453

Station 3 (Laminar)

XSTA	= .572 [m]	DEL1	= +9.513E-4 [m]
Cf	= 7.143E-4	DEL2	= +3.826E-4 [m]
Upw	= 28.17 [m/S]	H	= 2.487
Visc	= 1.651E-5 [m^2/S]	REdel1	= 1.623E+3
REx	= 9.748E+5	REdel2	= +6.525E+2
Del995	= 3.242E-3 [m]		

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.011	2.089	3.65	3.92	.035	2.093
2	.013	2.353	4.30	4.42	.041	2.514
3	.015	2.678	4.94	5.03	.047	2.783
4	.017	3.039	5.58	5.71	.053	2.981
5	.019	3.392	6.23	6.37	.060	3.095
6	.021	3.797	6.87	7.13	.066	3.294
7	.024	4.297	7.84	8.07	.075	3.391
8	.027	4.792	8.81	9.00	.084	3.376
9	.030	5.332	9.77	10.02	.094	3.540
10	.034	6.063	11.06	11.39	.106	3.500
11	.039	6.913	12.68	12.99	.121	3.664
12	.044	7.821	14.29	14.69	.137	3.697
13	.054	9.502	17.51	17.85	.168	3.790
14	.064	11.181	20.73	21.00	.198	4.102
15	.074	12.788	23.96	24.02	.229	3.777
16	.084	14.250	27.18	26.77	.260	4.233
17	.099	16.335	32.02	30.68	.306	4.103
18	.119	18.969	38.46	35.63	.368	4.029
19	.139	21.189	44.91	39.80	.430	3.845
20	.159	23.072	51.36	43.34	.491	3.545
21	.179	24.545	57.80	46.11	.553	3.205
22	.209	26.228	67.47	49.27	.646	2.783
23	.239	27.221	77.14	51.14	.738	1.869
24	.279	27.856	90.04	52.33	.861	1.212
25	.329	28.098	106.15	52.78	1.016	.727
26	.379	28.162	122.27	52.90	1.170	.688
27	.479	28.174	154.51	52.92	1.478	.554
28	.579	28.156	186.74	52.89	1.787	.578
29	.729	28.164	235.09	52.94	2.249	.511

FILE: IUP0824S3

Station 3 (Turbulent)

XSTA = .572 [m]
Cf = 2.700E-3
Upw = 28.17 [m/S]
Visc = 1.651E-5 [m^2/S]
REx = 9.748E+5
Del99S = 3.242E-3 [m]

DEL1 = +1.757E-3 [m]
DEL2 = +7.904E-4 [m]
H = 2.223
REdel1 = 2.998E+3
REdel2 = +1.348E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del99S	u'/Upw
1	.011	7.123	7.10	6.88	.035	11.649
2	.013	7.155	8.35	6.91	.041	12.275
3	.015	7.653	9.60	7.39	.047	13.644
4	.017	9.339	10.86	9.02	.053	14.468
5	.019	9.620	12.11	9.29	.060	15.163
6	.021	10.014	13.36	9.68	.066	13.330
7	.024	10.559	15.24	10.20	.075	14.549
8	.027	11.060	17.12	10.69	.084	13.781
9	.030	11.785	19.00	11.39	.094	14.813
10	.034	12.480	21.51	12.06	.106	14.239
11	.039	13.333	24.64	12.88	.121	15.262
12	.044	12.843	27.78	12.41	.137	15.701
13	.054	14.735	34.05	14.24	.168	13.500
14	.064	16.882	40.31	16.31	.198	13.215
15	.074	17.507	46.58	16.92	.229	13.423
16	.084	17.626	52.85	17.03	.260	14.049
17	.099	18.916	62.25	18.28	.306	10.990
18	.119	20.177	74.78	19.50	.368	11.825
19	.139	20.337	87.31	19.65	.430	14.082
20	.159	20.980	99.85	20.27	.491	11.081
21	.179	22.077	112.38	21.33	.553	11.870
22	.209	23.354	131.18	22.57	.646	12.353
23	.239	24.321	149.98	23.50	.738	9.843
24	.279	24.970	175.05	24.13	.861	11.271
25	.329	24.482	206.39	23.65	1.016	9.903
26	.379	25.431	237.72	24.57	1.170	8.072
27	.479	26.202	300.39	25.32	1.478	7.554
28	.579	26.654	363.06	25.75	1.787	3.814
29	.729	0.000	457.06	0.00	2.249	0.000

FILE: IUP082493

Station 3 (Transitional)

XSTA = .572 [m]
Cf = 7.800E-4
Upw = 28.17 [m/S]
Visc = 1.651E-5 [m^2/S]
REx = 9.748E+5
Del995 = 3.242E-3 [m]

DEL1 = +9.504E-4 [m]
DEL2 = +3.898E-4 [m]
H = 2.438
REdel1 = 1.621E+3
REdel2 = +6.648E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.011	2.223	3.81	4.00	.035	4.005
2	.013	2.499	4.49	4.49	.041	4.387
3	.015	2.847	5.16	5.12	.047	4.896
4	.017	3.237	5.84	5.82	.053	5.511
5	.019	3.578	6.51	6.43	.060	5.505
6	.021	4.033	7.18	7.25	.066	5.910
7	.024	4.494	8.19	8.08	.075	5.726
8	.027	5.030	9.20	9.04	.084	6.016
9	.030	5.555	10.21	9.99	.094	6.087
10	.034	6.236	11.56	11.21	.106	5.562
11	.039	7.157	13.25	12.87	.121	6.376
12	.044	7.982	14.93	14.35	.137	5.554
13	.054	9.719	18.30	17.47	.168	5.914
14	.064	11.415	21.67	20.52	.198	6.271
15	.074	12.963	25.04	23.30	.229	5.507
16	.084	14.353	28.40	25.80	.260	5.249
17	.099	16.417	33.46	29.51	.305	4.765
18	.119	19.007	40.19	34.17	.368	4.541
19	.139	21.169	46.93	38.05	.430	4.393
20	.159	23.018	53.67	41.38	.491	4.095
21	.179	24.500	60.40	44.04	.553	3.730
22	.209	26.172	70.51	47.05	.646	3.534
23	.239	27.162	80.61	48.83	.738	2.736
24	.279	27.802	94.09	49.98	.861	2.374
25	.329	28.053	110.93	50.43	1.016	1.933
26	.379	28.117	127.77	50.54	1.170	1.742
27	.479	28.163	161.45	50.63	1.478	.927
28	.579	28.153	195.14	50.61	1.787	.642
29	.729	28.184	245.66	50.66	2.249	.511

FILE: IUP0824S4A

Station 4A (Laminar)

XSTA = .800 [m]
Cf = 7.897E-4
Upw = 26.06 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.255E+6
Del995 = 5.559E-3 [m]

DEL1 = +1.112E-3 [m]
DEL2 = +4.806E-4 [m]
H = 2.314
REdel1 = 1.745E+3
REdel2 = +7.540E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.010	1.764	3.24	3.41	.019	1.611
2	.012	2.069	3.86	4.00	.022	1.977
3	.014	2.394	4.48	4.62	.026	2.297
4	.016	2.721	5.11	5.25	.029	2.461
5	.018	3.077	5.73	5.94	.033	2.697
6	.020	3.357	6.35	6.48	.037	3.011
7	.023	3.930	7.29	7.59	.042	3.405
8	.027	4.581	8.54	8.85	.049	3.672
9	.032	5.444	10.09	10.51	.058	4.448
10	.037	6.197	11.65	11.97	.067	4.599
11	.044	7.214	13.84	13.93	.080	4.786
12	.054	8.697	16.95	16.80	.098	5.405
13	.064	9.831	20.07	18.99	.116	6.011
14	.084	12.252	26.30	23.66	.152	6.391
15	.104	14.218	32.54	27.46	.186	6.745
16	.124	16.127	38.77	31.15	.224	6.494
17	.154	18.676	48.12	36.07	.278	6.312
18	.184	20.809	57.47	40.19	.332	5.624
19	.214	22.543	66.83	43.54	.386	4.800
20	.244	23.825	76.18	46.02	.440	3.755
21	.284	24.928	88.64	48.15	.512	2.648
22	.324	25.516	101.11	49.28	.584	1.890
23	.364	25.825	113.58	49.88	.656	1.252
24	.464	26.021	144.75	50.26	.835	.849
25	.564	26.069	175.92	50.35	1.015	.733
26	.714	26.059	222.68	50.33	1.285	.648
27	.864	26.048	269.43	50.31	1.555	.628
28	1.014	26.058	316.19	50.33	1.825	.539
29	1.164	26.057	362.95	50.33	2.095	.557

FILE: IUP0824S4A

Station 4A (Turbulent)

XSTA = .800 [m]
Cf = 3.150E-3
Upw = 26.06 [m/S]
Visc = 1.661E-5 [m^2/S]
RE> = 1.255E+6
Del99S = 5.559E-3 [m]

DEL1 = +1.348E-3 [m]
DEL2 = +9.245E-4 [m]
H = 1.458
REdel1 = 2.114E+3
REdel2 = +1.450E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del99S	u'/Upw
1	.010	5.877	6.47	5.68	.019	10.007
2	.012	7.203	7.71	6.97	.022	10.574
3	.014	7.690	8.98	7.44	.026	11.981
4	.016	8.394	10.20	8.12	.029	12.592
5	.018	9.545	11.45	9.23	.033	13.819
6	.020	9.737	12.69	9.42	.037	13.127
7	.023	10.552	14.56	10.20	.042	13.435
8	.027	11.525	17.05	11.15	.049	13.824
9	.032	12.610	20.16	12.19	.058	13.592
10	.037	13.006	23.27	12.58	.067	13.586
11	.044	13.603	27.63	13.16	.080	13.809
12	.054	14.774	33.86	14.29	.098	13.581
13	.064	15.221	40.08	14.72	.116	12.264
14	.084	16.202	52.53	15.67	.152	12.818
15	.104	17.038	64.98	16.48	.188	11.747
16	.124	17.998	77.44	17.41	.224	11.730
17	.154	19.012	96.11	18.39	.278	10.146
18	.184	20.132	114.79	19.47	.332	10.210
19	.214	20.604	133.46	19.92	.386	10.386
20	.244	21.287	152.14	20.59	.440	10.432
21	.284	22.377	177.04	21.64	.512	9.127
22	.324	22.777	201.94	22.03	.584	9.421
23	.364	23.282	226.85	22.51	.656	8.829
24	.464	24.050	289.10	23.26	.835	7.720
25	.564	24.812	351.35	23.99	1.015	6.175
26	.714	25.211	444.74	24.38	1.285	5.769
27	.884	25.652	538.12	24.81	1.555	3.443
28	1.014	25.747	631.50	24.90	1.825	2.055
29	1.164	24.636	724.88	23.82	2.095	8.033

FILE: IUP0824S4A

Station 4A (Transitional)

XSTA = .800 [m]
Cf = 1.400E-3
Upw = 26.06 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.255E+6
Del995 = 5.559E-3 [m]

DEL1 = +1.107E-3 [m]
DEL2 = +5.529E-4 [m]
H = 2.002
REdel1 = 1.737E+3
REdel2 = +8.674E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.010	2.938	4.31	4.26	.019	9.014
2	.012	3.542	5.14	5.14	.022	10.692
3	.014	4.075	5.97	5.91	.026	11.777
4	.016	4.349	6.80	6.31	.029	12.118
5	.018	5.021	7.63	7.28	.033	13.856
6	.020	5.268	8.46	7.64	.037	13.556
7	.023	6.002	9.71	8.71	.042	14.262
8	.027	6.491	11.37	9.42	.049	14.281
9	.032	7.386	13.44	10.71	.058	14.626
10	.037	8.165	15.52	11.84	.067	14.445
11	.044	9.016	18.42	13.08	.080	13.854
12	.054	10.450	22.57	15.16	.098	13.625
13	.064	11.356	26.72	16.47	.116	12.462
14	.084	13.314	35.02	19.31	.152	10.918
15	.104	14.982	43.32	21.73	.188	9.677
16	.124	16.598	51.62	24.08	.224	8.708
17	.154	18.768	64.07	27.22	.278	7.575
18	.184	20.636	76.53	29.93	.332	7.160
19	.214	22.114	88.98	32.08	.386	7.165
20	.244	23.299	101.43	33.80	.440	7.024
21	.284	24.414	118.03	35.41	.512	6.147
22	.324	25.005	134.63	36.27	.584	6.016
23	.364	25.398	151.23	36.84	.656	5.262
24	.464	25.752	192.73	37.35	.835	3.934
25	.564	25.942	234.24	37.63	1.015	2.536
26	.714	26.023	296.49	37.75	1.285	1.494
27	.864	26.041	358.75	37.78	1.555	.793
28	1.014	26.057	421.00	37.80	1.825	.559
29	1.164	26.055	483.25	37.80	2.095	.625

FILE: IUP0824S4

Station 4 (Laminar)

XSTA = .600 [m]
Cf = 7.866E-4
Upw = 28.09 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.353E+6
Del995 = 8.599E-3 [m]

DEL1 = +1.014E-3 [m]
DEL2 = +4.373E-4 [m]
H = 2.319
REdel1 = 1.715E+3
REdel2 = +7.395E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.013	2.585	4.41	4.64	.020	3.384
2	.015	2.891	5.08	5.19	.023	3.635
3	.017	3.350	5.75	6.01	.026	4.186
4	.019	3.634	6.42	6.52	.029	4.120
5	.021	4.015	7.09	7.21	.032	4.408
6	.023	4.439	7.76	7.97	.035	4.717
7	.025	4.872	8.43	8.75	.038	5.359
8	.027	5.303	9.10	9.52	.041	5.450
9	.030	5.971	10.11	10.72	.046	5.908
10	.033	6.447	11.12	11.57	.050	5.899
11	.038	7.290	12.79	13.09	.058	6.135
12	.048	9.116	16.15	16.37	.073	7.214
13	.059	10.680	19.50	19.17	.088	7.242
14	.078	13.559	26.21	24.34	.118	8.157
15	.099	15.891	32.91	28.53	.149	6.335
16	.118	17.908	39.62	32.15	.179	8.139
17	.148	20.860	49.68	37.45	.225	7.327
18	.179	22.985	59.74	41.27	.270	6.685
19	.209	24.523	68.12	44.03	.306	5.616
20	.228	25.792	76.51	46.31	.346	4.303
21	.278	27.186	93.27	48.81	.422	2.540
22	.328	27.823	110.04	49.95	.497	1.926
23	.378	28.027	126.81	50.34	.573	1.348
24	.478	28.116	160.34	50.48	.725	1.054
25	.578	28.097	193.87	50.44	.876	.778
26	.728	28.081	244.17	50.42	1.104	.758
27	.878	28.106	294.47	50.48	1.331	.709
28	1.028	28.078	344.77	50.41	1.558	.623

FILE: IUP0EC454

Station 4 (Turbulent)

XSTA = .800 [m]
Cf = 3.100E-3
Upw = 28.09 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.353E+6
Del995 = 8.599E-3 [m]

DEL1 = +1.231E-3 [m]
DEL2 = +8.506E-4 [m]
H = 1.447
REdel1 = 2.082E+3
REdel2 = +1.438E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.013	7.956	8.79	7.20	.020	11.956
2	.015	8.719	10.12	7.89	.023	12.456
3	.017	9.646	11.45	8.72	.026	12.143
4	.019	10.447	12.78	9.45	.029	12.494
5	.021	11.235	14.11	10.16	.032	12.611
6	.023	12.060	15.44	10.91	.035	12.697
7	.025	12.770	16.78	11.55	.038	12.765
8	.027	12.716	18.11	11.50	.041	13.043
9	.030	13.566	20.10	12.27	.046	13.039
10	.033	14.123	22.10	12.77	.050	12.696
11	.038	14.799	25.43	13.38	.058	13.215
12	.048	16.119	32.09	14.58	.073	12.355
13	.058	16.663	38.74	15.07	.088	12.597
14	.078	17.890	52.08	16.18	.119	11.509
15	.098	18.896	65.37	17.09	.149	11.041
16	.118	19.700	78.69	17.82	.179	10.432
17	.148	20.956	98.66	18.95	.225	10.285
18	.178	21.924	118.63	19.83	.270	9.650
19	.208	22.700	135.27	20.53	.309	9.556
20	.228	23.475	151.91	21.23	.348	9.084
21	.278	24.323	185.20	22.00	.422	9.500
22	.328	25.099	218.48	22.70	.497	8.578
23	.378	25.745	251.77	23.28	.573	7.888
24	.478	26.480	318.34	23.93	.725	6.883
25	.578	26.754	384.91	24.20	.876	5.721
26	.728	27.138	484.76	24.54	1.103	4.160
27	.878	27.388	584.62	24.77	1.331	3.908
28	1.028	27.884	684.48	25.22	1.556	1.738

FILE: IUP082454

Station 4 (Transitional)

XSTA = .800 [m]
Cf = 1.900E-3
Upw = 28.09 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.353E+6
Del995 = 6.599E-3 [m]

DEL1 = +1.019E-3 [m]
DEL2 = +5.772E-4 [m]
H = 1.766
REdel1 = 1.724E+3
REdel2 = +9.759E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.013	5.571	6.88	6.44	.020	13.222
2	.015	6.300	7.92	7.28	.023	14.172
3	.017	6.964	8.96	8.04	.026	14.664
4	.019	7.678	10.01	8.87	.029	15.541
5	.021	8.124	11.05	9.38	.032	16.155
6	.023	8.928	12.09	10.31	.035	16.805
7	.025	9.354	13.13	10.81	.038	17.293
8	.027	9.533	14.18	11.01	.041	16.749
9	.030	10.309	15.74	11.91	.046	17.068
10	.033	10.784	17.30	12.46	.050	17.024
11	.038	11.786	19.91	13.63	.058	17.071
12	.048	13.006	25.12	15.02	.073	16.170
13	.058	14.138	30.33	16.33	.088	14.981
14	.078	16.049	40.76	18.54	.119	12.749
15	.098	17.565	51.18	20.29	.149	11.265
16	.118	18.887	61.60	21.82	.179	9.978
17	.148	20.912	77.24	24.16	.225	9.071
18	.178	22.433	92.87	25.91	.270	8.560
19	.203	23.605	105.90	27.27	.308	8.495
20	.228	24.663	118.93	28.51	.346	8.131
21	.278	25.912	144.99	29.93	.422	8.403
22	.328	26.668	171.05	30.81	.497	7.504
23	.378	27.115	197.11	31.32	.573	6.473
24	.478	27.616	249.22	31.90	.725	4.723
25	.578	27.861	301.34	32.18	.876	3.092
26	.728	28.017	379.51	32.36	1.103	1.555
27	.878	28.096	457.69	32.45	1.331	.889
28	1.028	28.077	535.86	32.43	1.558	.636

FILE: IUP0824SS

Station 5 (Laminar)

XSTA = 1.029 [m]
Cf = 1.100E-3
Upw = 28.72 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.778E+6
Del995 = 1.010E-2 [m]

DEL1 = +9.139E-4 [m]
DEL2 = +4.492E-4 [m]
H = 2.034
REdel1 = 1.580E+3
REdel2 = +7.766E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.019	5.141	7.70	7.63	.019	7.480
2	.021	5.595	8.51	8.31	.021	6.969
3	.023	6.071	9.33	9.01	.023	6.176
4	.026	6.690	10.54	9.93	.026	5.713
5	.030	7.744	12.16	11.50	.030	6.072
6	.035	9.227	14.19	13.70	.035	6.629
7	.040	10.345	16.22	15.36	.040	6.764
8	.050	12.324	20.27	18.30	.050	7.352
9	.070	15.500	28.38	23.02	.069	8.323
10	.090	18.573	36.49	27.58	.089	8.669
11	.120	21.283	48.65	31.60	.119	7.276
12	.170	24.203	68.93	35.94	.168	6.407
13	.220	26.550	89.20	39.42	.218	4.048
14	.320	28.116	129.74	41.75	.317	2.649
15	.420	28.498	170.29	42.32	.416	1.747
16	.520	28.575	210.83	42.43	.515	1.368
17	.670	28.578	271.65	42.43	.663	1.232
18	.820	28.601	332.47	42.47	.812	1.209
19	.970	28.646	393.28	42.54	.960	.981
20	1.120	28.675	454.10	42.58	1.109	.839
21	1.320	28.728	535.19	42.66	1.307	.662
22	1.520	28.704	616.28	42.62	1.505	.587

FILE: IUP0824S5

Station 5 (Turbulent)

XSTA = 1.029 [m]
Cf = 3.820E-3
Upw = 28.72 [m/S]
Visc = 1.661E-5 [m^2/S]
RE> = 1.778E+6
Del995 = 1.005E-2 [m]

DEL1 = +1.423E-3 [m]
DEL2 = +1.044E-3 [m]
H = 1.363
REdel1 = 2.460E+3
REdel2 = +1.805E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.014	10.675	10.58	8.51	.014	9.160
2	.016	11.524	12.09	9.18	.016	9.158
3	.018	12.585	13.60	10.01	.018	9.194
4	.021	13.647	15.87	10.87	.021	9.273
5	.025	14.697	18.89	11.71	.025	8.976
6	.030	15.728	22.67	12.53	.030	8.757
7	.035	16.435	26.44	13.10	.035	8.699
8	.045	17.453	34.00	13.91	.045	8.290
9	.065	18.626	49.11	15.00	.065	7.852
10	.085	19.630	64.22	15.64	.085	7.489
11	.115	20.664	86.89	16.47	.114	7.331
12	.165	21.930	124.67	17.47	.164	7.382
13	.215	22.853	162.44	18.21	.214	7.228
14	.315	24.410	238.00	19.45	.313	7.303
15	.415	25.529	313.56	20.34	.413	6.644
16	.515	26.412	389.11	21.04	.512	5.894
17	.665	27.158	502.45	21.64	.662	4.855
18	.815	27.541	615.78	21.94	.811	4.256
19	.965	27.725	729.11	22.09	.960	3.794
20	1.115	27.797	842.45	22.15	1.109	4.661
21	1.315	28.928	993.56	23.05	1.308	1.416
22	1.515	28.337	1144.67	22.58	1.507	.161

FILE: IUP082455

Station 5 (Transitional)

XSTA = 1.029 [m]
Cf = 3.770E-3
Upw = 28.72 [m/S]
Visc = 1.661E-5 [m^2/S]
REx = 1.778E+6
Del995 = 1.005E-2 [m]

DEL1 = +1.224E-3 [m]
DEL2 = +8.599E-4 [m]
H = 1.423
REdel1 = 2.116E+3
REdel2 = +1.487E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.014	10.396	10.51	8.34	.014	10.014
2	.016	11.204	12.01	8.99	.016	10.184
3	.018	12.156	13.51	9.75	.018	10.573
4	.021	13.306	15.76	10.67	.021	10.522
5	.025	14.329	18.76	11.49	.025	10.376
6	.030	15.393	22.52	12.35	.030	10.001
7	.035	16.103	26.27	12.92	.035	9.859
8	.045	17.140	33.78	13.75	.045	9.278
9	.065	18.668	48.79	14.97	.065	8.249
10	.085	19.577	63.80	15.70	.085	7.593
11	.115	20.699	86.32	16.60	.114	7.343
12	.165	22.066	123.85	17.70	.164	7.563
13	.215	23.057	161.38	18.49	.214	7.673
14	.315	24.781	236.44	19.88	.313	7.980
15	.415	25.937	311.50	20.80	.413	7.154
16	.515	26.866	386.56	21.55	.512	6.103
17	.665	27.796	499.15	22.29	.662	4.440
18	.815	28.293	611.74	22.69	.811	3.017
19	.965	28.546	724.33	22.90	.960	1.844
20	1.115	28.645	836.92	22.98	1.109	1.305
21	1.315	28.729	987.03	23.04	1.308	.668
22	1.515	28.703	1137.15	23.02	1.507	.568

FILE: IUP082356

STATION: 6

XSTA = 1.257 [m]
Cf = 3.700E-3
Upw = 32.64 [m/S]
Visc = 1.653E-5 [m^2/S]
REx = 2.482E+6
Del995 = 1.105E-2 [m]

DEL1 = +1.437E-3 [m]
DEL2 = +1.054E-3 [m]
H = 1.364
REdel1 = 2.836E+3
REdel2 = +2.080E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.008	8.960	6.79	6.38	.007	6.888
2	.010	10.077	8.49	7.18	.009	7.057
3	.012	11.326	10.19	8.07	.011	7.556
4	.017	13.876	14.43	9.89	.015	7.908
5	.022	15.849	18.68	11.29	.020	8.050
6	.032	18.313	27.17	13.05	.029	7.719
7	.042	19.680	35.66	14.02	.038	7.279
8	.057	20.864	48.40	14.86	.052	6.826
9	.072	21.665	61.13	15.43	.065	6.531
10	.092	22.624	78.12	16.12	.083	6.441
11	.122	23.541	103.59	16.77	.110	6.411
12	.147	24.155	124.82	17.21	.133	6.338
13	.172	24.772	146.04	17.65	.156	6.226
14	.202	25.333	171.52	18.05	.183	6.050
15	.232	25.871	196.99	18.43	.210	6.018
16	.282	26.541	239.45	18.91	.255	5.873
17	.332	27.230	281.90	19.40	.300	5.617
18	.382	27.899	324.36	19.88	.346	5.482
19	.482	28.961	409.26	20.63	.436	5.147
20	.582	29.915	494.17	21.31	.527	4.735
21	.682	30.662	579.08	21.84	.617	4.297
22	.782	31.297	663.99	22.30	.708	3.906
23	.882	31.823	748.90	22.67	.798	3.276
24	.982	32.221	833.81	22.95	.889	2.568
25	1.082	32.439	918.72	23.11	.979	1.918
26	1.182	32.585	1003.63	23.21	1.070	1.538
27	1.282	32.667	1088.54	23.27	1.160	1.155
28	1.382	32.684	1173.45	23.28	1.251	.970
29	1.532	32.672	1300.82	23.28	1.387	.647
30	1.682	32.664	1428.18	23.27	1.522	.590

FILE: T082951

STATION: 1

Xsta = .114 [m]
Tw = 33.69 [C]
Tinf = 29.49 [C]
Qw = 1.725E+2 [W/m^2]
Yeff = -1.500E-4 [m]
Cond = 13.20

Del-ther = 1.212E-3 [m]
Del-enth = 1.359E-4 [m]
Del-cond = 6.261E-4 [m]
Re-enth = 2.327E+2
Prt = 0.000
Qadded = 17.85 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.007	33.126	3.41	2.99	.058	.137
2	+.009	33.103	4.39	3.13	.074	.144
3	+.011	33.036	5.37	3.48	.091	.160
4	+.013	32.857	6.35	4.45	.107	.204
5	+.015	32.680	7.33	5.39	.124	.247
6	+.017	32.525	8.32	6.23	.140	.285
7	+.020	32.271	9.80	7.59	.165	.348
8	+.023	32.072	11.28	8.67	.190	.397
9	+.026	31.859	12.77	9.81	.215	.449
10	+.030	31.634	14.76	11.03	.248	.504
11	+.034	31.411	16.74	12.24	.281	.559
12	+.038	31.210	18.74	13.32	.314	.606
13	+.042	31.010	20.73	14.41	.347	.657
14	+.047	30.801	23.23	15.55	.388	.708
15	+.052	30.623	25.73	16.51	.429	.752
16	+.057	30.440	28.23	17.51	.470	.797
17	+.062	30.308	30.73	18.23	.512	.828
18	+.067	30.187	33.24	19.00	.553	.864
19	+.077	29.969	38.24	20.08	.635	.913
20	+.087	29.842	43.24	20.77	.718	.944
21	+.097	29.745	48.23	21.30	.800	.967
22	+.107	29.679	53.23	21.66	.883	.984
23	+.117	29.641	58.22	21.87	.965	.993
24	+.127	29.621	63.20	21.98	1.048	.998
25	+.137	29.616	68.18	22.01	1.130	.999
26	+.152	29.609	75.64	22.05	1.254	1.001
27	+.172	29.616	85.59	22.01	1.419	.999

FILE: T082952

STATION: 2

Xsta	= .343 [m]	Del-ther	= 2.334E-3 [m]
Tw	= 36.18 [C]	Del-enth	= 2.568E-4 [m]
Tinf	= 29.37 [C]	Del-cond	= 1.121E-3 [m]
Qw	= 1.578E+2 [W/m^2]	Re-enth	= 4.387E+2
Yeff	= +5.000E-5 [m]	Prt	= 0.000
Cond	= 13.20	Qadded	= 55.14 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.005	0.000	0.00	0.00	0.000	0.000
2	+.007	35.827	2.57	1.58	.030	.054
3	+.009	35.738	3.31	1.97	.039	.067
4	+.011	35.651	4.05	2.36	.047	.080
5	+.013	35.511	4.78	2.98	.056	.101
6	+.015	35.359	5.53	3.66	.064	.124
7	+.018	35.118	6.64	4.73	.077	.160
8	+.022	34.818	8.13	6.07	.094	.205
9	+.027	34.477	10.00	7.59	.116	.256
10	+.032	34.162	11.87	9.00	.137	.304
11	+.037	33.854	13.75	10.38	.159	.350
12	+.042	33.585	15.63	11.68	.180	.393
13	+.047	33.283	17.52	12.96	.201	.436
14	+.052	33.022	19.41	14.13	.223	.475
15	+.057	32.758	21.31	15.33	.244	.515
16	+.062	32.514	23.21	16.43	.266	.551
17	+.072	32.070	27.02	18.44	.308	.618
18	+.082	31.647	30.85	20.37	.351	.682
19	+.092	31.283	34.69	22.03	.394	.736
20	+.102	30.969	38.53	23.46	.437	.783
21	+.112	30.706	42.37	24.67	.480	.823
22	+.122	30.451	46.22	25.84	.523	.861
23	+.132	30.261	50.06	26.71	.566	.890
24	+.147	30.023	55.83	27.80	.630	.926
25	+.162	29.854	61.59	28.58	.694	.951
26	+.177	29.738	67.34	29.12	.759	.969
27	+.192	29.672	73.07	29.42	.823	.978
28	+.212	29.599	80.72	29.76	.908	.989
29	+.232	29.563	88.35	29.93	.994	.995
30	+.252	29.543	95.98	30.02	1.080	.998
31	+.272	29.534	103.60	30.06	1.166	.999
32	+.302	29.526	115.03	30.10	1.294	1.000
33	+.332	29.529	126.46	30.08	1.423	1.000

FILE: T1125S3

STATION: 3

Xste = .572 [m]
Tw = 39.98 [C]
Tinf = 30.06 [C]
Qw = 1.819E+2 [W/m^2]
Yeff = +1.000E-4 [m]
Cond = 13.20

Del-ther = 3.568E-3 [m]
Del-enth = 4.298E-4 [m]
Del-cond = 1.457E-3 [m]
Re-enth = 6.692E+2
Prt = 0.000
Qadded = 125.94 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.012	38.864	3.66	3.59	.034	.113
2	+.014	38.842	4.27	3.66	.039	.115
3	+.017	38.751	5.18	3.96	.048	.124
4	+.020	38.697	6.10	4.13	.056	.130
5	+.024	38.311	7.34	5.38	.067	.169
6	+.027	38.178	8.26	5.81	.076	.182
7	+.032	37.712	9.82	7.32	.090	.229
8	+.037	37.454	11.37	8.16	.104	.255
9	+.042	37.103	12.93	9.30	.118	.291
10	+.047	36.855	14.49	10.11	.132	.316
11	+.052	36.687	16.04	10.66	.146	.332
12	+.062	36.137	19.19	12.46	.174	.388
13	+.072	35.576	22.35	14.30	.202	.445
14	+.082	35.170	25.51	15.64	.230	.486
15	+.092	34.769	28.69	16.96	.258	.526
16	+.102	34.371	31.88	18.28	.286	.566
17	+.112	33.906	35.10	19.83	.314	.613
18	+.122	33.472	38.33	21.27	.342	.657
19	+.132	33.105	41.55	22.50	.370	.694
20	+.142	32.747	44.79	23.70	.398	.730
21	+.152	32.403	48.04	24.85	.426	.765
22	+.162	32.115	51.29	25.82	.454	.794
23	+.182	31.595	57.79	27.57	.510	.846
24	+.202	31.170	64.30	29.01	.566	.889
25	+.222	30.841	70.80	30.12	.622	.922
26	+.242	30.609	77.29	30.91	.678	.946
27	+.262	30.422	83.76	31.55	.734	.965
28	+.292	30.263	93.44	32.09	.818	.981
29	+.322	30.163	103.10	32.43	.902	.991
30	+.372	30.103	119.15	32.63	1.043	.997
31	+.472	30.078	151.21	32.72	1.323	.999
32	+.672	30.075	215.28	32.73	1.883	1.000
33	+.972	30.073	311.35	32.74	2.724	1.000
34	+1.372	30.071	439.54	32.74	3.845	1.000

FILE: T1125S4

STATION: 4

Xsta	= .800 [m]	Del-ther	= 1.012E-2 [m]
Tw	= 33.90 [C]	Del-enth	= 1.444E-3 [m]
Tinf	= 29.94 [C]	Del-cond	= 4.788E-4 [m]
Qw	= 2.163E+2 [W/m^2]	Re-enth	= 2.312E+3
Yeff	= +5.000E-5 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 170.10 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.007	33.152	3.93	3.65	.007	.191
2	+.009	32.990	5.06	4.45	.009	.232
3	+.013	32.853	7.32	5.13	.013	.267
4	+.016	32.731	9.01	5.73	.016	.298
5	+.019	32.646	10.71	6.15	.019	.320
6	+.022	32.565	12.41	6.55	.022	.341
7	+.027	32.437	15.24	7.18	.027	.374
8	+.032	32.359	18.07	7.57	.032	.394
9	+.042	32.204	23.73	8.34	.042	.433
10	+.052	32.108	29.40	8.81	.051	.458
11	+.067	32.000	37.91	9.35	.066	.486
12	+.087	31.878	49.26	9.96	.086	.517
13	+.117	31.721	66.30	10.74	.116	.557
14	+.147	31.577	83.37	11.45	.145	.594
15	+.177	31.465	100.45	12.01	.175	.623
16	+.217	31.309	123.26	12.78	.215	.662
17	+.267	31.138	151.82	13.64	.264	.706
18	+.317	30.986	180.40	14.40	.313	.745
19	+.367	30.855	209.02	15.05	.363	.779
20	+.417	30.719	237.68	15.73	.412	.814
21	+.467	30.602	266.36	16.32	.462	.844
22	+.517	30.494	295.06	16.86	.511	.871
23	+.567	30.381	323.81	17.42	.560	.900
24	+.617	30.300	352.53	17.83	.610	.921
25	+.717	30.163	409.99	18.52	.709	.956
26	+.817	30.077	467.41	18.95	.808	.978
27	+.917	30.030	524.76	19.18	.906	.990
28	+1.067	29.999	610.71	19.34	1.055	.998
29	+1.217	29.998	696.57	19.34	1.203	.998
30	+1.417	29.994	811.07	19.37	1.401	.999
31	+1.717	29.989	982.81	19.39	1.697	1.001

FILE: T112555

STATION: 5

Xsta = 1.029 [m]
Tw = 33.82 [C]
Tinf = 29.90 [C]
Qw = 2.165E+2 [W/m^2]
Yeff = +2.000E-5 [m]
Cond = 13.20

Del-ther = 1.340E-2 [m]
Del-enth = 1.979E-3 [m]
Del-cond = 4.837E-4 [m]
Re-enth = 3.225E+3
Prt = .950
Qadded = 239.95 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.004	33.367	2.79	2.78	.003	.116
2	+.009	33.150	6.29	4.11	.007	.171
3	+.014	32.818	9.80	6.14	.010	.255
4	+.017	32.666	11.91	7.07	.013	.293
5	+.020	32.534	14.02	7.88	.015	.326
6	+.024	32.422	16.83	8.57	.018	.355
7	+.029	32.278	20.36	9.45	.022	.391
8	+.034	32.196	23.88	9.95	.025	.412
9	+.039	32.131	27.40	10.36	.029	.429
10	+.049	32.007	34.45	11.12	.037	.460
11	+.059	31.922	41.50	11.64	.044	.481
12	+.074	31.814	52.08	12.30	.055	.509
13	+.094	31.712	66.19	12.94	.070	.535
14	+.114	31.629	80.32	13.45	.085	.556
15	+.144	31.528	101.51	14.07	.107	.581
16	+.184	31.390	129.81	14.92	.137	.616
17	+.224	31.287	158.13	15.56	.167	.642
18	+.264	31.188	186.47	16.17	.197	.667
19	+.304	31.105	214.83	16.69	.227	.688
20	+.394	30.922	278.72	17.82	.294	.735
21	+.494	30.732	349.85	19.00	.369	.783
22	+.594	30.576	421.05	19.97	.443	.822
23	+.694	30.422	492.37	20.93	.518	.861
24	+.794	30.267	563.83	21.89	.593	.900
25	+.894	30.141	635.30	22.68	.667	.932
26	+.994	30.043	706.77	23.29	.742	.957
27	+1.094	29.971	778.20	23.74	.817	.975
28	+1.244	29.912	885.20	24.11	.929	.990
29	+1.394	29.883	992.10	24.28	1.041	.998
30	+1.694	29.873	1205.69	24.35	1.265	1.000
31	+1.994	29.875	1419.19	24.34	1.488	1.000

FILE: T112556

STATION: 6

Xsta	= 1.257 [m]	Del-ther	= 1.518E-2 [m]
Tw	= 33.61 [C]	Del-enth	= 2.354E-3 [m]
Tinf	= 29.65 [C]	Del-cond	= 4.740E-4 [m]
Qw	= 2.166E+2 [W/m^2]	Re-enth	= 4.086E+3
Yeff	= -4.000E-5 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 298.15 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.006	33.156	5.92	2.91	.005	.116
2	+.013	32.741	9.65	5.60	.009	.223
3	+.018	32.471	13.38	7.35	.012	.293
4	+.023	32.324	17.11	8.31	.015	.331
5	+.033	32.107	24.58	9.72	.022	.387
6	+.043	31.960	32.06	10.68	.028	.425
7	+.058	31.809	43.28	11.66	.038	.464
8	+.073	31.720	54.50	12.24	.048	.487
9	+.093	31.612	69.47	12.95	.061	.515
10	+.123	31.483	91.95	13.80	.081	.548
11	+.173	31.326	129.44	14.82	.114	.588
12	+.223	31.209	166.97	15.58	.147	.619
13	+.273	31.099	204.53	16.31	.180	.647
14	+.373	30.910	279.76	17.54	.246	.696
15	+.473	30.749	355.09	18.60	.312	.737
16	+.573	30.592	430.56	19.64	.377	.778
17	+.723	30.386	543.92	20.99	.476	.831
18	+.923	30.141	695.37	22.61	.608	.894
19	+1.123	29.930	847.08	24.00	.740	.949
20	+1.323	29.804	998.68	24.83	.872	.981
21	+1.523	29.749	1150.02	25.20	1.003	.995
22	+1.723	29.733	1301.16	25.30	1.135	1.000
23	+2.023	29.732	1527.72	25.31	1.333	1.000
24	+2.423	29.731	1829.80	25.32	1.596	1.000

FILENAME: ST0829

Uinf: 28.18 [m/s]
HEAT FLUX TO HEATER: 196.1 [W/m^2]
HEAT LOSS THROUGH BACK WALL OVER DA: .081 [W]
FREESTREAM TEMPERATURE: 29.27 [C]

	Twall [C]	REx	Enth [m]	Qconv [W/m^2]	St
1	35.74	+6.498E+4	+1.373E-6	+1.452E+2	+6.965E-4
2	34.76	+1.086E+5	+2.401E-5	+1.621E+2	+9.157E-4
3	33.87	+1.524E+5	+5.786E-5	+1.672E+2	+1.125E-3
4	32.97	+1.965E+5	+9.614E-5	+1.727E+2	+1.440E-3
5	33.32	+2.389E+5	+1.191E-4	+1.704E+2	+1.301E-3
6	33.87	+2.831E+5	+1.391E-4	+1.671E+2	+1.124E-3
7	34.09	+3.265E+5	+1.601E-4	+1.660E+2	+1.066E-3
8	34.31	+3.697E+5	+1.748E-4	+1.648E+2	+1.013E-3
9	34.80	+4.127E+5	+1.832E-4	+1.619E+2	+9.083E-4
10	35.29	+4.554E+5	+1.967E-4	+1.589E+2	+8.184E-4
11	35.34	+4.988E+5	+2.123E-4	+1.589E+2	+8.127E-4
12	35.60	+5.417E+5	+2.251E-4	+1.572E+2	+7.714E-4
13	35.76	+5.848E+5	+2.360E-4	+1.564E+2	+7.485E-4
14	36.07	+6.276E+5	+2.454E-4	+1.545E+2	+7.061E-4
15	36.27	+6.704E+5	+2.583E-4	+1.533E+2	+6.809E-4
16	36.33	+7.136E+5	+2.692E-4	+1.530E+2	+6.734E-4
17	36.61	+7.562E+5	+2.783E-4	+1.513E+2	+6.414E-4
18	36.69	+7.993E+5	+2.864E-4	+1.510E+2	+6.334E-4
19	37.09	+8.415E+5	+2.915E-4	+1.485E+2	+5.912E-4
20	37.25	+8.842E+5	+3.048E-4	+1.475E+2	+5.754E-4
21	37.17	+9.276E+5	+3.287E-4	+1.480E+2	+5.834E-4
22	36.79	+9.718E+5	+3.650E-4	+1.502E+2	+6.212E-4
23	36.26	+1.017E+6	+4.205E-4	+1.534E+2	+6.823E-4
24	35.41	+1.062E+6	+5.149E-4	+1.583E+2	+8.008E-4
25	34.27	+1.109E+6	+6.655E-4	+1.650E+2	+1.022E-3
26	33.25	+1.156E+6	+8.624E-4	+1.709E+2	+1.329E-3
27	32.53	+1.202E+6	+1.048E-3	+1.750E+2	+1.557E-3
28	32.25	+1.247E+6	+1.135E-3	+1.765E+2	+1.627E-3
29	32.28	+1.291E+6	+1.204E-3	+1.762E+2	+1.604E-3
30	32.13	+1.335E+6	+1.310E-3	+1.771E+2	+1.908E-3
31	32.01	+1.379E+6	+1.433E-3	+1.777E+2	+1.997E-3
32	31.84	+1.424E+6	+1.524E-3	+1.788E+2	+2.144E-3
33	31.88	+1.467E+6	+1.513E-3	+1.785E+2	+2.110E-3
34	32.08	+1.510E+6	+1.552E-3	+1.774E+2	+1.956E-3
35	31.93	+1.555E+6	+1.652E-3	+1.782E+2	+2.088E-3
36	31.90	+1.599E+6	+1.689E-3	+1.784E+2	+2.091E-3
37	31.98	+1.642E+6	+1.694E-3	+1.779E+2	+2.028E-3
38	32.05	+1.686E+6	+1.765E-3	+1.774E+2	+1.987E-3
39	31.91	+1.730E+6	+1.914E-3	+1.783E+2	+2.091E-3

40	31.77	+1.775E+6	+2.020E-3	+1.791E+2	+2.208E-3
41	31.78	+1.818E+6	+2.075E-3	+1.790E+2	+2.197E-3
42	31.77	+1.862E+6	+2.084E-3	+1.791E+2	+2.208E-3
43	31.94	+1.905E+6	+2.086E-3	+1.760E+2	+2.053E-3
44	31.85	+1.949E+6	+2.213E-3	+1.786E+2	+2.130E-3
45	31.77	+1.994E+6	+2.402E-3	+1.791E+2	+2.211E-3
46	31.57	+2.039E+6	+2.516E-3	+1.803E+2	+2.420E-3
47	31.66	+2.082E+6	+2.430E-3	+1.797E+2	+2.314E-3
48	31.85	+2.125E+6	+2.396E-3	+1.786E+2	+2.136E-3
49	31.86	+2.169E+6	+2.440E-3	+1.786E+2	+2.128E-3
50	31.87	+2.212E+6	+2.620E-3	+1.785E+2	+2.117E-3
51	31.60	+2.256E+6	+2.816E-3	+1.801E+2	+2.384E-3
52	31.63	+2.301E+6	+2.724E-3	+1.799E+2	+2.349E-3

**********CROSS-SPAN DATA**********

61	31.81	+2.695E+6	------	+1.788E+2	+2.167E-3
62	32.06	+2.736E+6	------	+1.773E+2	+1.944E-3
63	32.38	+2.778E+6	------	+1.757E+2	+1.748E-3
64	32.49	+2.820E+6	------	+1.751E+2	+1.678E-3
65	32.47	+2.864E+6	------	+1.752E+2	+1.692E-3
66	21.65	+3.002E+6	------	+2.330E+2	-9.285E-4
67	32.61	+2.951E+6	------	+1.744E+2	+1.611E-3
68	32.51	+2.995E+6	------	+1.749E+2	+1.667E-3
69	31.66	+3.046E+6	------	+1.797E+2	+2.314E-3
70	31.95	+3.088E+6	------	+1.781E+2	+2.050E-3

**********CROSS-SPAN DATA**********

71	34.09	+3.112E+6	------	+1.659E+2	+1.085E-3
72	31.24	+3.182E+6	------	+1.821E+2	+2.650E-3
73	34.77	+3.193E+6	------	+1.620E+2	+9.125E-4
74	35.40	+3.231E+6	------	+1.585E+2	+8.038E-4
75	35.29	+3.275E+6	------	+1.590E+2	+8.192E-4
76	35.46	+3.317E+6	------	+1.580E+2	+7.919E-4
77	35.49	+3.360E+6	------	+1.579E+2	+7.877E-4
78	35.42	+3.404E+6	------	+1.583E+2	+7.988E-4
79	35.52	+3.446E+6	------	+1.577E+2	+7.826E-4
80	35.63	+3.488E+6	------	+1.571E+2	+7.668E-4
81	35.50	+3.533E+6	------	+1.578E+2	+7.861E-4
82	35.29	+3.579E+6	------	+1.591E+2	+8.201E-4
83	34.87	+3.626E+6	------	+1.615E+2	+8.929E-4
84	33.77	+3.681E+6	------	+1.678E+2	+1.153E-3
85	34.70	+3.715E+6	------	+1.625E+2	+9.274E-4
86	34.06	+3.765E+6	------	+1.661E+2	+1.073E-3

**********CROSS-SPAN DATA**********

87	31.32	+3.839E+6	------	+1.816E+2	+2.723E-3
88	31.27	+3.884E+6	------	+1.819E+2	+2.783E-3
89	32.40	+3.915E+6	------	+1.756E+2	+1.733E-3
90	34.63	+3.933E+6	------	+1.629E+2	+9.417E-4
91	35.69	+3.962E+6	------	+1.556E+2	+7.297E-4
92	36.56	+3.998E+6	------	+1.517E+2	+6.471E-4

93	36.70	+4.039E+6	------	+1.506E+2	+6.312E-4
94	35.29	+4.099E+6	------	+1.590E+2	+6.192E-4
95	35.88	+4.138E+6	------	+1.557E+2	+7.319E-4
96	35.45	+4.184E+6	------	+1.581E+2	+7.944E-4
97	35.51	+4.227E+6	------	+1.578E+2	+7.853E-4
98	35.50	+4.270E+6	------	+1.578E+2	+7.881E-4
99	37.09	+4.294E+6	------	+1.485E+2	+5.911E-4
100	34.68	+4.367E+6	------	+1.626E+2	+9.316E-4
101	34.59	+4.412E+6	------	+1.631E+2	+9.495E-4
102	32.59	+4.481E+6	------	+1.745E+2	+1.625E-3

**********CROSS-SPAN DATA**********

103	31.86	+4.534E+6	------	+1.786E+2	+2.128E-3
104	32.08	+4.575E+6	------	+1.774E+2	+1.948E-3
105	32.04	+4.619E+6	------	+1.776E+2	+1.978E-3
106	32.17	+4.661E+6	------	+1.769E+2	+1.881E-3
107	32.41	+4.702E+6	------	+1.755E+2	+1.723E-3
108	32.43	+4.745E+6	------	+1.754E+2	+1.711E-3
109	32.44	+4.789E+6	------	+1.753E+2	+1.707E-3
110	32.42	+4.833E+6	------	+1.754E+2	+1.717E-3
111	32.49	+4.876E+6	------	+1.750E+2	+1.676E-3
112	32.54	+4.919E+6	------	+1.748E+2	+1.649E-3
113	32.51	+4.963E+6	------	+1.749E+2	+1.667E-3
114	32.40	+5.008E+6	------	+1.755E+2	+1.730E-3
115	32.34	+5.053E+6	------	+1.759E+2	+1.770E-3
116	32.45	+5.095E+6	------	+1.753E+2	+1.704E-3
117	32.27	+5.141E+6	------	+1.763E+2	+1.811E-3
118	31.97	+5.190E+6	------	+1.780E+2	+2.030E-3

**********CROSS-SPAN DATA**********

119	31.67	+5.238E+6	------	+1.798E+2	+2.302E-3
120	32.31	+5.272E+6	------	+1.761E+2	+1.790E-3
121	32.43	+5.314E+6	------	+1.754E+2	+1.711E-3
122	32.43	+5.358E+6	------	+1.754E+2	+1.711E-3
123	32.34	+5.403E+6	------	+1.759E+2	+1.770E-3
124	32.38	+5.448E+6	------	+1.757E+2	+1.743E-3
125	32.32	+5.491E+6	------	+1.760E+2	+1.780E-3
126	32.30	+5.535E+6	------	+1.761E+2	+1.794E-3
127	32.17	+5.581E+6	------	+1.769E+2	+1.881E-3
128	31.95	+5.628E+6	------	+1.781E+2	+2.045E-3

**********CROSS-SPAN DATA**********

129	4.52	+6.162E+6	------	+3.123E+2	-3.724E-4
130	32.25	+5.710E+6	------	+1.764E+2	+1.826E-3
131	32.66	+5.748E+6	------	+1.741E+2	+1.588E-3
132	32.48	+5.794E+6	------	+1.752E+2	+1.685E-3
133	32.22	+5.842E+6	------	+1.766E+2	+1.847E-3
134	19.17	+6.117E+6	------	+2.453E+2	-7.347E-4
135	25.82	+6.042E+6	------	+2.114E+2	-1.875E-3
136	32.34	+5.972E+6	------	+1.759E+2	+1.770E-3
137	32.22	+6.017E+6	------	+1.766E+2	+1.847E-3
138	32.22	+6.061E+6	------	+1.766E+2	+1.847E-3

Station 3 (Laminar)

RAW DATA--FILE NAME: IUV082853

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	11.975	0.000	1.088	.323	-.145	.045
2	.067	13.054	0.000	1.075	.257	-.091	.043
3	.077	14.596	0.000	1.126	.258	-.025	.042
4	.092	16.544	0.000	1.150	.279	-.011	.038
5	.117	19.695	0.000	1.068	.296	-.016	.042
6	.142	22.231	0.000	.950	.267	.013	.039
7	.167	24.220	0.000	.884	.283	.023	.030
8	.192	25.621	0.000	.745	.235	.014	.030
9	.217	26.671	0.000	.535	.185	.008	.027
10	.242	27.181	0.000	.474	.189	.010	.028
11	.267	27.546	0.000	.326	.134	.012	.029
12	.292	27.800	0.000	.285	.119	-0.000	.023
13	.342	27.865	0.000	.183	.102	-0.000	.021
14	.367	27.964	0.000	.156	.065	0.000	.017
15	.392	27.882	0.000	.146	.074	-0.000	.021
16	.442	27.973	0.000	.144	.067	-0.000	.018
17	.492	27.890	0.000	.144	.065	-.003	.017
18	.592	27.955	0.000	.134	.063	-.001	.014

Upw [m/s]= 27.94 DEL995 [cm]= .324 Cf= 7.143E-4

LAMINAR FLOW :
REDUCED DATA--FILE NAME: IUV082853

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.18519	.42860	.03896	.01156	.51938
2	.20679	.46722	.03848	.00921	.32786
3	.23765	.52239	.04032	.00923	.08909
4	.28395	.59211	.04117	.01000	.04027
5	.36111	.70490	.03823	.01059	.05614
6	.43827	.79567	.03399	.00956	-.04822
7	.51543	.86684	.03166	.01013	-.09265
8	.59259	.91700	.02665	.00840	-.05155
9	.66975	.95457	.01913	.00663	-.02735
10	.74691	.97282	.01697	.00675	-.03720
11	.82407	.98591	.01169	.00478	-.04127
12	.90123	.99498	.01021	.00427	.00127
13	1.05556	.99733	.00655	.00384	.00174
14	1.13272	1.00086	.00558	.00234	-.00086
15	1.20988	.99792	.00522	.00266	.00179
16	1.36420	1.00117	.00514	.00239	.00133
17	1.51852	.99822	.00514	.00233	.00949
18	1.82716	1.00052	.00480	.00225	.00260

Station 3 (Turbulent)

RAW DATA--FILE NAME: IUV082693

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	15.658	.198	3.259	1.885	-.834	.045
2	.067	16.287	.273	3.473	2.117	-2.269	.043
3	.077	16.939	-.226	3.274	1.762	.150	.042
4	.092	18.708	-.159	3.113	1.838	-1.643	.038
5	.117	19.715	-.067	3.240	1.686	-2.276	.042
6	.142	21.137	.131	3.163	1.695	-3.378	.039
7	.167	22.003	.059	3.020	1.932	-2.339	.038
8	.192	23.236	-.102	3.084	1.691	-1.508	.038
9	.217	24.055	.046	2.747	1.649	-1.179	.037
10	.242	24.312	-.095	2.807	1.323	-1.038	.038
11	.267	25.502	-.032	2.560	1.407	-1.113	.038
12	.292	25.417	-.100	2.096	1.418	-.813	.033
13	.342	26.098	.016	1.951	1.261	-.343	.031
14	.367	26.782	-.159	1.297	1.044	-.009	.017
15	.392	25.754	.136	2.278	1.079	-.478	.031
16	.442	26.445	.231	1.832	1.139	-.390	.018
17	.492	26.917	.158	1.625	.712	-.474	.017
18	.592	27.604	.042	.923	.715	-.119	.014

Upw [m/s]= 27.94 DEL995 [cm]= .324 Cf= 2.700E-3

TURBULENT FLOW :
REDUCED DATA--FILE NAME: IUV082693

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.18519	.56042	.11663	.06748	.60156
2	.20679	.58292	.12430	.07576	2.15261
3	.23765	.60626	.11719	.06308	-.14273
4	.28395	.66959	.11143	.06579	1.55934
5	.36111	.70582	.11596	.06040	2.15652
6	.43827	.75652	.11319	.06776	3.20520
7	.51543	.78751	.10809	.06913	2.21904
8	.59259	.83164	.11038	.06052	1.43072
9	.66975	.86096	.09832	.05902	1.11921
10	.74691	.87015	.10046	.04736	.97692
11	.82407	.91274	.09164	.05035	1.05612
12	.90123	.90969	.07508	.05076	.58146
13	1.05556	.93407	.06951	.04513	.32560
14	1.13272	.95855	.04642	.03737	.00388
15	1.20988	.92178	.08154	.03882	.45498
16	1.36420	.94650	.06556	.04075	.36960
17	1.51852	.96339	.05815	.02547	.44957
18	1.82716	.98797	.03302	.02559	.11308

Station 3 (Transitional)

RAW DATA--FILE NAME: IUV082893

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	12.143	-.088	1.483	.514	-.109	.045
2	.087	13.193	-.347	1.432	.524	-.081	.043
3	.077	14.694	-.468	1.372	.442	.011	.042
4	.092	16.626	-.460	1.345	.454	-.043	.038
5	.117	19.696	-.501	1.236	.480	-.109	.042
6	.142	22.189	-.508	1.136	.473	-.148	.039
7	.167	24.152	-.462	1.085	.447	-.090	.030
8	.192	25.549	-.407	.992	.376	-.057	.030
9	.217	26.600	-.413	.811	.335	-.082	.027
10	.242	27.100	-.288	.812	.290	-.037	.028
11	.267	27.487	-.228	.639	.274	-.034	.029
12	.292	27.745	-.251	.553	.245	-.024	.023
13	.342	27.828	-.120	.418	.208	-.014	.021
14	.367	27.945	-.174	.271	.147	-0.000	.017
15	.392	27.837	-.079	.469	.174	-.022	.021
16	.442	27.946	-.123	.343	.171	-.018	.018
17	.492	27.874	-.036	.279	.114	-.014	.017
18	.592	27.950	-.097	.174	.104	-.003	.014

Upw [m/s]= 27.94 DEL995 [cm]= .324 Cf= 7.800E-4

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV082893

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.18519	.43460	.05306	.01839	.35960
2	.20679	.47220	.05124	.01874	.26676
3	.23765	.52591	.04910	.01583	-.03457
4	.28395	.59505	.04813	.01625	.14127
5	.36111	.70493	.04425	.01647	.35821
6	.43827	.79416	.04068	.01694	.48857
7	.51543	.86442	.03884	.01599	.29512
8	.59259	.91444	.03551	.01345	.18600
9	.66975	.95205	.02903	.01198	.20513
10	.74691	.96995	.02806	.01038	.12078
11	.82407	.98378	.02267	.00981	.11317
12	.90123	.99303	.01981	.00875	.07898
13	1.05556	.99800	.01498	.00744	.04446
14	1.13272	1.00018	.00871	.00527	.00084
15	1.20988	.99832	.01680	.00824	.07154
16	1.36420	1.00021	.01227	.00610	.06005
17	1.51852	.99755	.00998	.00408	.04585
18	1.82716	1.00035	.00824	.00373	.01803

Station 4A (Laminar)

RAW DATA--FILE NAME: IUV082854A

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	9.488	0.000	1.340	.481	.048	.348
2	.085	12.383	0.000	1.524	.521	-.087	.338
3	.135	17.342	0.000	1.562	.556	.008	.308
4	.185	20.931	0.000	1.384	.540	.102	.298
5	.235	23.541	0.000	.997	.360	.018	.282
6	.285	24.971	0.000	.633	.273	.024	.268
7	.335	25.629	0.000	.402	.188	-0.000	.248
8	.385	25.900	0.000	.234	.149	-.007	.237
9	.435	25.954	0.000	.249	.185	-.017	.199
10	.485	25.986	0.000	.185	.141	.001	.173
11	.535	26.004	0.000	.183	.137	-.002	.144
12	.585	25.939	0.000	.173	.144	.001	.100
13	.635	26.020	0.000	.165	.143	.002	.084
14	.735	25.951	0.000	.161	.143	-.003	.043
15	.835	26.030	0.000	.152	.153	-.001	.028
16	.935	25.970	0.000	.147	.121	-.001	.013

Upw [m/s]= 25.98 DEL995 [cm]= .556 Cf= 7.897E-4

LAMINAR FLOW :
REDUCED DATA--FILE NAME: IUV082854A

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.10793	.36445	.05157	.01853	-.18179
2	.15291	.47665	.05865	.02005	.32461
3	.24285	.66753	.06012	.02140	-.02873
4	.33279	.80568	.05327	.02079	-.38348
5	.42274	.90611	.03838	.01385	-.06796
6	.51268	.96118	.02438	.01050	-.09102
7	.60263	.98648	.01549	.00723	.00013
8	.69257	.99691	.00902	.00572	.02485
9	.78251	.99899	.00958	.00718	.06455
10	.87246	1.00023	.00712	.00544	-.00464
11	.96240	1.00082	.00703	.00528	.00915
12	1.05235	.99844	.00866	.00555	-.00282
13	1.14229	1.00153	.00833	.00549	-.00821
14	1.32218	.99889	.00821	.00549	.01041
15	1.50207	1.00192	.00584	.00590	.00285
16	1.68195	.99961	.00565	.00466	.00522

Station 4A (Turbulent)

RAW DATA--FILE NAME: IUV0828S4A

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	14.550	.735	2.909	1.678	.141	.348
2	.085	16.523	-.063	2.942	1.686	-.960	.338
3	.135	18.644	-.217	2.563	1.666	-1.179	.308
4	.185	20.069	-.050	2.551	1.715	-1.794	.268
5	.235	21.464	-.228	2.503	1.534	-1.499	.262
6	.285	22.616	-.166	2.457	1.426	-1.394	.286
7	.335	23.394	-.208	2.105	1.322	-.943	.248
8	.385	23.801	-.178	2.145	1.244	-.823	.237
9	.435	24.347	-.092	1.835	1.119	-.624	.199
10	.485	24.519	-.099	1.739	1.018	-.442	.173
11	.535	24.812	-.021	1.459	1.068	-.354	.144
12	.585	25.006	-.023	1.378	.842	-.322	.100
13	.635	25.000	.047	1.506	.895	-.403	.064
14	.735	25.274	-.011	1.171	.980	-.271	.043
15	.835	25.324	-.031	1.189	.978	-.200	.028
16	.935	25.823	.221	.766	.727	-.132	.013

Upw [m/s]= 25.98 DEL995 [cm]= .556 Cf= 3.150E-3

TURBULENT FLOW :
REDUCED DATA--FILE NAME: IUV0828S4A

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.10793	.56005	.11199	.06457	-.13236
2	.15291	.63599	.11326	.06488	.90299
3	.24285	.71762	.09866	.06420	1.10913
4	.33279	.77249	.09820	.06603	1.68770
5	.42274	.82616	.09635	.05906	1.41053
6	.51268	.87050	.09455	.05490	1.31086
7	.60263	.90045	.08103	.05089	.86693
8	.69257	.91613	.08257	.04787	.77419
9	.78251	.93716	.07084	.04306	.58719
10	.87246	.94378	.06692	.03920	.41591
11	.96240	.95502	.05616	.04109	.33314
12	1.05235	.96252	.05303	.03240	.30251
13	1.14229	.96229	.05805	.03446	.37538
14	1.32218	.97282	.04507	.03770	.25474
15	1.50207	.97475	.04575	.03764	.18850
16	1.68196	.99398	.02950	.02798	.12432

Station 4A (Transitional)

RAW DATA--FILE NAME: IUV0828S4A

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	11.237	.328	3.158	1.111	.939	.348
2	.085	13.782	-.326	2.880	1.087	.058	.338
3	.135	17.744	-.478	2.018	1.052	-.233	.308
4	.185	20.678	-.408	1.851	1.067	-.567	.296
5	.235	22.955	-.436	1.831	.881	-.555	.282
6	.285	24.293	-.361	1.778	.810	-.541	.286
7	.335	25.073	-.321	1.468	.682	-.309	.246
8	.385	25.401	-.263	1.390	.622	-.251	.237
9	.435	25.634	-.217	1.063	.530	-.185	.199
10	.485	25.731	-.202	.927	.446	-.107	.173
11	.535	25.832	-.176	.714	.430	-.085	.144
12	.585	25.846	-.113	.543	.301	-.041	.100
13	.635	25.935	-.167	.542	.300	-.053	.084
14	.735	25.922	-.098	.318	.245	-.017	.043
15	.835	26.010	-.163	.273	.223	-.009	.028
16	.935	25.968	-.090	.169	.149	-.004	.013

Upw [m/s]= 25.98 DEL995 [cm]= .558 Cf= 1.400E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV0828S4A

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.10793	.43252	.12157	.04275	-1.98746
2	.15291	.53050	.11087	.04162	-.12265
3	.24285	.68298	.07768	.04049	.49319
4	.33279	.79585	.07126	.04107	1.20084
5	.42274	.88356	.07048	.03381	1.17403
6	.51268	.93506	.06842	.03118	1.14538
7	.60263	.96510	.05650	.02625	.65404
8	.69257	.97773	.05349	.02392	.53085
9	.78251	.98668	.04092	.02040	.35207
10	.87246	.99043	.03570	.01715	.22592
11	.96240	.99431	.02748	.01653	.17952
12	1.05235	.99485	.02088	.01157	.08764
13	1.14229	.99825	.02084	.01155	.11251
14	1.32218	.99779	.01225	.00844	.03604
15	1.50207	1.00115	.01053	.00859	.01982
16	1.68196	.99954	.00851	.00575	.00771

Station 4 (Laminar)

RAW DATA--FILE NAME: IUV082854

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	11.142	0.000	1.832	.699	.184	.881
2	.070	12.323	0.000	2.030	.728	-.197	.853
3	.080	14.820	0.000	2.023	.723	-.134	.864
4	.140	20.094	0.000	1.961	.651	.062	.836
5	.190	23.737	0.000	1.509	.576	.056	.800
6	.240	25.859	0.000	1.069	.402	.051	.548
7	.290	27.075	0.000	.783	.310	.033	.532
8	.340	27.589	0.000	.411	.260	.022	.487
9	.390	27.769	0.000	.297	.216	.004	.462
10	.440	27.805	0.000	.274	.216	-.002	.413
11	.490	27.739	0.000	.231	.229	-.002	.370
12	.540	27.744	0.000	.248	.250	-.002	.288
13	.590	27.826	0.000	.213	.215	-.006	.236
14	.640	27.742	0.000	.220	.220	-.006	.185
15	.690	27.809	0.000	.200	.227	-.004	.122
16	.740	27.812	0.000	.223	.204	-.001	.069
17	.840	27.760	0.000	.169	.167	-.002	.050
18	.940	27.744	0.000	.174	.177	-0.000	.018

Upw [m/s]= 27.73 DEL995 [cm]= .660 Cf= 7.866E-4

LAMINAR FLOW :
REDUCED DATA--FILE NAME: IUV082854

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.09082	.40172	.06607	.02521	-.00820
2	.10608	.44431	.07320	.02624	.00697
3	.13638	.53436	.07295	.02605	.00375
4	.21215	.72449	.07070	.02348	-.00170
5	.28792	.85585	.05442	.02076	-.00144
6	.36369	.93236	.03856	.01451	-.00151
7	.43946	.97622	.02752	.01117	-.00114
8	.51523	.99473	.01480	.00938	-.00062
9	.59100	1.00122	.01069	.00786	-.00034
10	.66677	1.00253	.00989	.00780	.00040
11	.74254	1.00014	.00833	.00826	.00015
12	.81831	1.00032	.00894	.00901	.00009
13	.89407	1.00027	.00767	.00775	.00016
14	.96984	1.00025	.00795	.00793	.00004
15	1.04561	1.00067	.00722	.00818	.00016
16	1.12138	1.00078	.00803	.00737	.00008
17	1.27292	1.00069	.00608	.00674	.00008
18	1.42446	1.00032	.00627	.00637	.00002

Station 4 (Turbulent)

RAW DATA--FILE NAME: IUV082854

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/s2]	Gamma
1	.060	16.295	.939	2.772	1.900	-.382	.681
2	.070	17.133	.325	2.877	1.847	-.992	.653
3	.090	18.543	-.044	2.768	1.674	-1.607	.664
4	.140	20.534	-.017	2.602	1.677	-1.827	.636
5	.190	22.101	-.196	2.556	1.540	-1.660	.600
6	.240	23.303	-.103	2.514	1.463	-1.307	.548
7	.290	24.521	-.222	2.302	1.424	-1.274	.532
8	.340	25.106	-.211	2.237	1.262	-1.047	.487
9	.390	25.655	-.115	2.104	1.194	-.855	.462
10	.440	26.163	-.128	1.860	1.066	-.583	.413
11	.490	26.393	-.072	1.608	1.021	-.409	.370
12	.540	26.650	-.020	1.519	.947	-.494	.286
13	.590	26.800	-.107	1.511	.998	-.444	.236
14	.640	26.876	-.080	1.271	.929	-.101	.185
15	.690	26.964	-.098	1.242	.918	-.229	.122
16	.740	27.133	-.053	1.247	.869	-.394	.069
17	.840	27.227	-.096	.912	.799	-.169	.050
18	.940	27.352	.089	.827	.708	-.347	.018

Upw [m/s]= 27.73 DEL995 [cm]= .660 Cf= 3.100E-3

TURBULENT FLOW :
REDUCED DATA--FILE NAME: IUV082854

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.09092	.58751	.09993	.06852	.32896
2	.10608	.61773	.10375	.06661	.83237
3	.13638	.66858	.10054	.06037	1.34613
4	.21215	.74035	.09381	.06047	1.53240
5	.28792	.79885	.09216	.05553	1.39280
6	.36369	.84020	.09066	.05276	1.09879
7	.43946	.88411	.08299	.05134	1.08620
8	.51523	.90522	.08066	.04551	.87852
9	.59100	.92501	.07586	.04304	.71720
10	.66677	.94333	.06705	.03643	.48699
11	.74254	.95160	.05796	.03660	.34273
12	.81831	.96089	.05475	.03414	.41396
13	.89407	.96830	.05449	.03587	.37202
14	.96984	.96902	.04584	.03349	.08449
15	1.04561	.97219	.04478	.03310	.19173
16	1.12138	.97631	.04485	.03134	.33087
17	1.27292	.98170	.03288	.02882	.15620
18	1.42446	.98618	.02882	.02553	.29092

Station 4 (Transitional)

RAW DATA--FILE NAME: IUV082S4

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	14.550	.672	3.486	1.649	.889	.661
2	.070	15.466	.125	3.475	1.562	.034	.653
3	.090	17.294	-.188	3.103	1.444	-.688	.664
4	.140	20.374	-.206	2.398	1.420	-1.070	.636
5	.190	22.756	-.358	2.339	1.264	-1.160	.600
6	.240	24.457	-.251	2.367	1.131	-.941	.548
7	.290	25.715	-.309	2.172	1.065	-.803	.532
8	.340	26.380	-.277	2.016	.903	-.594	.487
9	.390	26.782	-.207	1.789	.832	-.499	.462
10	.440	27.127	-.211	1.458	.709	-.309	.413
11	.490	27.241	-.133	1.168	.649	-.188	.370
12	.540	27.429	-.110	.976	.553	-.177	.288
13	.590	27.583	-.182	.874	.522	-.131	.236
14	.640	27.581	-.118	.672	.447	-.031	.185
15	.690	27.705	-.190	.548	.387	-.043	.122
16	.740	27.752	-.176	.469	.327	-.045	.089
17	.840	27.733	-.101	.286	.295	-.011	.050
18	.940	27.737	-.102	.212	.201	-.008	.018

Upw [m/s]= 27.73 DEL995 [cm]= .660 Cf= 1.900E-3

TRANSITIONAL FLOW :

REDUCED DATA--FILE NAME: IUV082S4

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.09092	.52462	.12575	.05944	-1.21675
2	.10608	.55764	.12530	.05703	-.04666
3	.13638	.62355	.11188	.05207	.94200
4	.21215	.73459	.08645	.05121	1.48384
5	.28792	.82048	.08433	.04559	1.58675
6	.36369	.88181	.08533	.04077	1.28710
7	.43946	.92717	.07831	.03840	1.09837
8	.51523	.95114	.07267	.03255	.81241
9	.59100	.96601	.06452	.02999	.68350
10	.66677	.97808	.05256	.02555	.42274
11	.74254	.98218	.04285	.02339	.25787
12	.81831	.98696	.03519	.01995	.24252
13	.89407	.99452	.03151	.01881	.17905
14	.96984	.99445	.02424	.01610	.04209
15	1.04561	.99893	.01976	.01394	.05823
16	1.12138	1.00060	.01692	.01177	.06094
17	1.27292	.99993	.01030	.00518	.01558
18	1.42446	1.00006	.00763	.00725	.01130

Station 5 (Laminar)

RAW DATA--FILE NAME: IUV082855

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	15.234	0.000	2.341	.822	-.610	.979
2	.105	21.572	0.000	1.790	.472	.107	.977
3	.155	24.273	0.000	1.965	.733	-.247	.972
4	.205	26.242	0.000	1.579	.582	-.446	.969
5	.255	27.320	0.000	1.250	.574	-.487	.956
6	.355	28.034	0.000	1.211	.488	-.220	.922
7	.455	28.343	0.000	.797	.376	-.073	.903
8	.555	28.631	0.000	.251	.214	-.030	.930
9	.655	28.571	0.000	.174	.156	-.003	.866
10	.755	28.543	0.000	.193	.198	-.001	.759
11	.855	28.547	0.000	.185	.203	0.000	.626
12	.955	28.632	0.000	.203	.209	-.006	.441
13	1.055	28.639	0.000	.182	.193	-.002	.284
14	1.155	28.650	0.000	.177	.182	-.003	.168
15	1.255	28.633	0.000	.170	.178	-.003	.083
16	1.355	28.624	0.000	.157	.152	-.003	.049
17	1.555	28.624	0.000	.156	.134	-.002	.011

Upw [m/s]= 28.62 DEL995 [cm]= 1.005 Cf= 1.100E-3

LAMINAR FLOW :
REDUCED DATA--FILE NAME: IUV082855

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.05970	.53230	.08179	.03220	1.35440
2	.10448	.75374	.06256	.01651	-.23732
3	.15423	.84811	.06867	.02561	.54716
4	.20398	.91689	.05517	.02033	.99088
5	.25373	.95458	.04369	.02005	1.06060
6	.35323	.97954	.04232	.01698	.46893
7	.45274	.99031	.02785	.01315	.18106
8	.55224	1.00039	.00876	.00749	.06756
9	.65174	.99829	.00606	.00544	.00624
10	.75124	.99732	.00675	.00690	.00274
11	.85075	.99745	.00645	.00706	-.00030
12	.95025	1.00042	.00709	.00731	.01333
13	1.04975	1.00056	.00635	.00676	.00346
14	1.14925	1.00106	.00618	.00637	.00599
15	1.24876	1.00047	.00596	.00621	.00632
16	1.34826	1.00014	.00549	.00530	.00656
17	1.54726	1.00015	.00546	.00467	.00453

Station 5 (Turbulent)

RAW DATA--FILE NAME: IUV082885

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	18.391	.641	1.913	1.684	-1.207	.978
2	.105	20.453	.031	1.988	1.480	-1.546	.977
3	.155	21.824	-.142	1.966	1.394	-1.419	.972
4	.205	22.635	-.226	2.002	1.337	-1.369	.969
5	.255	23.460	-.154	1.989	1.268	-1.168	.956
6	.355	24.942	-.271	1.909	1.151	-.951	.922
7	.455	25.974	-.285	1.728	1.047	-.640	.903
8	.555	26.859	-.297	1.597	.882	-.437	.930
9	.655	27.365	-.210	1.359	.815	-.375	.886
10	.755	27.797	-.189	1.116	.722	-.278	.759
11	.855	28.093	-.235	.868	.662	-.137	.626
12	.955	28.314	-.283	.755	.583	-.110	.441
13	1.055	28.415	-.307	.627	.550	-.051	.284
14	1.155	28.464	-.257	.559	.559	-.099	.188
15	1.255	28.567	-.304	.420	.488	-.043	.083
16	1.355	28.540	-.193	.535	.660	-.118	.049
17	1.555	28.602	-.120	.449	.397	-.023	.011

Upw [m/s]= 28.62 DEL995 [cm]= 1.005 Cf= 3.820E-3

TURBULENT FLOW :

REDUCED DATA--FILE NAME: IUV082885

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.05970	.64258	.06683	.05886	.77127
2	.10448	.71462	.06945	.05171	.98826
3	.15423	.76253	.06671	.04870	.90727
4	.20398	.79785	.06996	.04672	.87511
5	.25373	.81972	.06948	.04432	.74650
6	.35323	.87147	.06671	.04021	.60780
7	.45274	.90756	.06037	.03657	.40893
8	.55224	.93847	.05581	.03081	.27931
9	.65174	.95614	.04748	.02847	.23945
10	.75124	.97125	.03898	.02524	.17796
11	.85075	.98158	.03033	.02313	.08771
12	.95025	.98932	.02636	.02036	.07033
13	1.04975	.99282	.02189	.01921	.03266
14	1.14925	.99526	.01953	.01952	.06306
15	1.24876	.99814	.01467	.01706	.02718
16	1.34826	.99718	.01889	.02307	.07514
17	1.54726	.99936	.01570	.01387	.01481

Station 5 (Transitional)

RAW DATA--FILE NAME: IUV082855

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/s2]	Gamma
1	.050	18.324	.627	1.975	1.675	-1.145	.979
2	.105	20.479	.020	1.990	1.466	-1.522	.977
3	.155	21.893	-.151	2.008	1.380	-1.411	.972
4	.205	22.940	-.228	2.078	1.320	-1.352	.966
5	.255	23.630	-.156	2.116	1.246	-1.147	.956
6	.355	25.183	-.269	2.040	1.113	-.887	.922
7	.455	26.203	-.280	1.802	1.002	-.571	.903
8	.555	26.982	-.294	1.607	.853	-.403	.930
9	.655	27.524	-.204	1.332	.761	-.318	.868
10	.755	27.977	-.187	1.028	.637	-.211	.759
11	.855	28.263	-.221	.730	.539	-.081	.626
12	.955	28.492	-.280	.546	.417	-.051	.441
13	1.055	28.575	-.292	.381	.336	-.014	.284
14	1.155	28.623	-.295	.286	.283	-.020	.188
15	1.255	28.628	-.315	.204	.221	-.008	.083
16	1.355	28.620	-.311	.194	.210	-.009	.048
17	1.555	28.624	-.333	.182	.141	-.002	.011

Upw [m/s]= 28.62 DEL995 [cm]= 1.005 Cf= 3.770E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV082855

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.05070	.64026	.06899	.05852	.74186
2	.10448	.71554	.06954	.05123	.98566
3	.15423	.76497	.07015	.04823	.91417
4	.20398	.80154	.07254	.04613	.87546
5	.25373	.82566	.07393	.04354	.74283
6	.35323	.87880	.07128	.03889	.57420
7	.45274	.91554	.06297	.03500	.36964
8	.55224	.94277	.05614	.02979	.26883
9	.65174	.96170	.04653	.02661	.20564
10	.75124	.97752	.03590	.02225	.13644
11	.85075	.98752	.02550	.01882	.05235
12	.95025	.98553	.01909	.01457	.03328
13	1.04975	.99843	.01332	.01173	.00939
14	1.14925	1.00009	.01001	.00989	.01298
15	1.24876	1.00027	.00712	.00771	.00401
16	1.34826	.99995	.00679	.00734	.00593
17	1.54726	1.00014	.00565	.00491	.00150

Station 6

RAW DATA--FILE NAME: IUV082856

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	19.660	.148	1.973	1.675	-1.658	.999
2	.110	21.725	-.058	1.923	1.428	-1.489	.998
3	.165	23.029	-.154	1.916	1.316	-1.466	.999
4	.265	24.524	-.177	1.810	1.202	-1.274	1.000
5	.365	25.881	-.262	1.748	1.118	-1.074	.999
6	.465	26.968	-.285	1.614	1.021	-.810	.998
7	.565	27.788	-.264	1.521	.956	-.708	.981
8	.665	28.468	-.285	1.367	.858	-.492	.940
9	.765	28.957	-.218	1.192	.718	-.344	.848
10	.865	29.415	-.202	.978	.622	-.198	.679
11	.965	29.716	-.183	.809	.528	-.149	.471
12	1.065	30.006	-.277	.584	.440	-.090	.282
13	1.165	30.114	-.269	.428	.352	-.048	.132
14	1.365	30.215	-.262	.250	.242	-.018	.043
15	1.565	30.233	-.285	.182	.160	-.005	.008

Upw [m/s]= 30.20 DEL995 [cm]= 1.105 Cf= 3.700E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV082856

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.05430	.65099	.06532	.05548	.98292
2	.09955	.71938	.06369	.04728	.88234
3	.14932	.76256	.06348	.04359	.86896
4	.23982	.81206	.05983	.03979	.75534
5	.33032	.85696	.05787	.03703	.63657
6	.42081	.89299	.05343	.03381	.47992
7	.51131	.92012	.05036	.03166	.41841
8	.60181	.94266	.04526	.02841	.29177
9	.69231	.95883	.03946	.02378	.20364
10	.78281	.97402	.03238	.02061	.11734
11	.87330	.98397	.02677	.01748	.06824
12	.96380	.99358	.01935	.01456	.05352
13	1.05430	.99716	.01416	.01165	.02518
14	1.23529	1.00048	.00827	.00801	.01085
15	1.41629	1.00108	.00603	.00531	.00276

IVT121053 Station 3 (Transitional)

Del 99.5 = .323 [cm] Tw-Tinf = 7.770 [C] Uow = 26.31 [m/S]
Qwall = 151.0 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	10.54	-.46	32.78	2.278	.908	.645	-.572	-1.038
2	.065	12.45	-.57	32.16	1.950	.573	.561	-.249	-.888
3	.095	16.07	-.72	31.14	1.813	.633	.476	-.302	-.672
4	.125	19.32	-.80	30.29	1.469	.453	.357	-.113	-.422
5	.165	22.58	-.80	29.49	1.269	.494	.315	-.216	-.314
6	.205	24.56	-.82	29.01	1.086	.382	.243	-.131	-.219
7	.255	25.77	-.77	28.72	.930	.346	.236	-.137	-.186
8	.285	26.11	-.73	28.62	.585	.298	.150	-.077	-.058
9	.325	26.32	-.74	28.61	.614	.236	.139	-.073	+.006
10	.365	26.30	-.67	28.60	.561	.236	.163	-.025	-.071
11	.405	26.37	-.68	28.61	.463	.174	.119	-.003	-.039
12	.445	26.38	-.67	28.63	.319	.154	.098	+.004	-.017
13	.485	26.39	-.66	28.62	.257	.144	.072	-.009	-.007
14	.525	26.38	-.65	28.61	.266	.165	.118	-.014	-.015

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.128	+9.680	-.3129	148.654	-40.488	+1.219	.141
2	+.124	+.214	-.0362	135.533	-36.778	+.547	.127
3	+.121	+.110	+.1629	111.047	-29.869	+.673	.104
4	+.081	-.262	+.0602	88.901	-23.639	+.495	.081
5	+.072	-.719	+.1596	63.014	-16.393	+.786	.071
6	+.038	-.588	+.1292	41.289	-10.356	+.862	.053
7	+.030	-.548	+.0829	19.984	-4.512	+1.023	.043
8	+.011	-.469	+.0410	10.321	-1.913	+1.266	.032
9	-0.000	-.174	+.0003	1.079	.493	+109.054	.032
10	+.012	-.166	+.0547	-4.003	1.689	+.891	.030
11	+.002	-.057	+.0150	-4.923	1.675	+.594	.019
12	+.001	-.031	+.0087	-1.683	.451	-2.122	.014
13	+.002	-.019	+.0056	5.719	-1.983	+1.553	.011
14	+.004	-.025	+.0252	17.282	-5.627	+1.019	.011

FILE NAME : IVT121053 Station 3 (Transitional)

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U = SUM(A(N) * Y^N)

A0= +1.8407E+00 A1= +1.9662E+02 A2= -5.1213E+02 A3= +4.3344E+02

Y	U	UC	% DIFF
.0500	10.5361	10.445	-.862
.0650	12.4546	12.576	+.974
.0950	16.0714	16.269	+1.229
.1250	19.3242	19.262	-.321
.1650	22.5832	22.287	-1.313
.2050	24.5594	24.359	-.817
.2550	25.7678	25.864	+.372
.2850	26.1140	26.312	+.759
.3250	26.3184	26.526	+.790
.3650	26.2987	26.454	+.591
.4050	26.3651	26.262	-.392
.4450	26.3767	26.116	-.990
.4850	26.3931	26.183	-.798
.5250	26.3797	26.629	+.944

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T = SUM(A(N) * Y^N)

A0= +3.5086E+01 A1= -5.4085E+01 A2= +1.4542E+02 A3= -1.2605E+02

Y	T	TC	% DIFF
.0500	32.7801	32.730	-.154
.0650	32.1574	32.150	-.022
.0950	31.1389	31.152	+.043
.1250	30.2897	30.351	+.204
.1650	29.4881	29.555	+.226
.2050	29.0141	29.024	+.034
.2550	28.7165	28.660	-.197
.2850	28.6186	28.565	-.186
.3250	28.6087	28.541	-.237
.3650	28.6048	28.589	-.057
.4050	28.6140	28.660	+.160
.4450	28.6319	28.706	+.260
.4850	28.6185	28.680	+.214
.5250	28.6135	28.532	-.286

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IVT1210S3 **Station 3 (Laminar)**

Del 99.5 = .323 [cm] Tw-Tinf = 7.770 [C] Uow = 26.31 [m/S]
Qwall = 151.0 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	10.17	-.49	32.85	1.560	.814	.463	-.688	-.517
2	.065	12.27	-.59	32.19	1.405	.275	.431	-.069	-.504
3	.095	16.03	-.75	31.12	1.363	.332	.354	-.091	-.410
4	.125	19.39	-.83	30.27	1.245	.285	.281	-.021	-.305
5	.165	22.70	-.83	29.45	.926	.256	.185	-.002	-.142
6	.205	24.67	-.83	28.98	.734	.189	.134	-.003	-.081
7	.255	25.89	-.79	28.68	.408	.158	.083	-.012	-.019
8	.285	26.17	-.74	28.60	.307	.136	.050	-.003	-.005
9	.325	26.39	-.76	28.61	.248	.125	.139	-.006	+.006
10	.365	26.36	-.68	28.59	.182	.115	.053	-.002	-0.000
11	.405	26.40	-.68	28.60	.169	.107	.047	-.002	+.001
12	.445	26.40	-.67	28.62	.158	.101	.046	-0.000	+.001
13	.485	26.41	-.67	28.61	.157	.099	.049	+.001	+.001
14	.525	26.40	-.65	28.60	.154	.090	.048	-.001	+0.000

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.097	+10.703	-.2972	154.356	-41.734	+1.907	.141
2	+.050	+.006	-.0052	140.563	-37.864	+.474	.127
3	+.035	+.333	-.0177	114.839	-30.663	+.703	.104
4	+.024	-.073	-.0043	91.598	-24.178	+.235	.081
5	+.012	-.083	+.0017	64.471	-16.646	+.050	.071
6	+.006	-.026	+.0038	41.759	-10.386	+.125	.053
7	+.003	-.012	+.0041	19.574	-4.352	+.970	.043
8	+.001	-.005	+.0005	9.574	-1.686	+.596	.032
9	-.001	-.005	+.0001	.102	.754	+69.968	.032
10	+.001	-.005	+.0017	-4.956	1.921	+.615	.030
11	+0.000	-.002	+.0001	-5.600	1.815	+2.241	.019
12	-0.000	-.002	+.0004	-1.831	.436	-2.580	.014
13	-0.000	-.002	+.0003	6.352	-2.216	+1.274	.011
14	+0.000	-.001	+.0004	18.949	-6.141	+.982	.011

FILE NAME : IVT1210S3 **Station 3 (Laminar)**

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U = SUM(A(N) * Y^N)

A0= +1.2014E+00 A1= +2.0482E+02 A2= -5.3907E+02 A3= +4.5976E+02

Y	U	UC	% DIFF
.0500	10.1695	10.152	-.172
.0650	12.2701	12.363	+.758
.0950	16.0318	16.188	+.974
.1250	19.3877	19.278	-.565
.1650	22.6969	22.385	-1.374
.2050	24.6682	24.495	-.703
.2550	25.8947	25.999	+.404
.2850	26.1677	26.430	+1.004
.3250	26.3854	26.609	+.848
.3650	26.3603	26.497	+.520
.4050	26.4046	26.272	-.504
.4450	26.3986	26.108	-1.100
.4850	26.4059	26.184	-.840
.5250	26.3953	26.675	+1.061

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T = SUM(A(N) * Y^N)

A0= +3.5211E+01 A1= -5.5924E+01 A2= +1.5185E+02 A3= -1.3261E+02

Y	T	TC	% DIFF
.0500	32.8468	32.778	-.210
.0650	32.1852	32.181	-.013
.0950	31.1211	31.155	+.109
.1250	30.2682	30.334	+.218
.1650	29.4492	29.522	+.247
.2050	28.9830	28.985	+.006
.2550	28.6809	28.625	-.194
.2850	28.6025	28.536	-.231
.3250	28.6085	28.522	-.302
.3650	28.5859	28.580	-.021
.4050	28.6031	28.659	+.195
.4450	28.6239	28.708	+.294
.4850	28.6145	28.677	+.217
.5250	28.6037	28.514	-.314

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IVT1210S3 **Station 3 (Turbulent)**

Del 99.5 = .323 [cm] Tw-Tinf = 7.770 [C] Upw = 26.31 [m/S]
Qwall = 151.0 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	12.78	-.27	32.37	4.029	1.333	1.211	-.399	-3.175
2	.065	13.72	-.44	31.97	3.817	1.431	1.078	-1.561	-3.261
3	.095	16.41	-.41	31.29	3.932	1.664	1.039	-2.248	-2.966
4	.125	18.60	-.55	30.53	2.924	1.242	.783	-.940	-1.571
5	.165	21.10	-.41	30.00	3.137	1.550	.824	-2.358	-1.767
6	.205	22.60	-.63	29.57	2.959	1.454	.689	-2.037	-1.575
7	.255	22.94	-.36	29.51	2.855	1.428	.703	-1.600	-1.580
8	.285	24.49	-.47	29.10	2.281	1.466	.598	-1.864	-.850
9	.325	24.26	-.27	28.62	2.401	1.016	.141	-1.075	-.018
10	.365	24.31	-.48	29.22	2.330	1.185	.641	-.339	-1.131
11	.405	24.33	-.72	29.18	2.390	1.014	.558	-.182	-.933
12	.445	24.78	-.70	29.21	1.800	1.022	.480	+.318	-.420
13	.485	25.30	-.38	28.96	1.582	.948	.360	-.556	-.393
14	.525	25.04	-.44	29.46	1.554	1.297	.548	-.856	-.241

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.412	+.729	-.0679	101.613	-27.765	+.265	.141
2	+.659	-.469	-.0401	93.085	-25.606	+.651	.127
3	+.805	-1.302	+.7797	77.165	-21.529	+.779	.104
4	+.404	-.807	+.2142	62.760	-17.774	+.659	.081
5	+.627	-3.393	+.4457	45.912	-13.268	+1.087	.071
6	+.506	-5.837	+1.0198	31.759	-9.333	+1.182	.053
7	+.270	-4.938	-.1406	17.857	-5.220	+1.731	.043
8	+.185	-10.052	+.1036	11.537	-3.180	+2.775	.032
9	+.005	-1.717	-.0079	5.467	-.962	+40.903	.032
10	+.223	-2.437	+.8206	2.093	.685	-.496	.030
11	+.111	-.959	+.2403	1.413	1.759	-2.029	.019
12	+.061	-.613	+.0489	3.428	2.262	+3.426	.014
13	+.098	-.151	+.0924	8.137	2.193	-1.522	.011
14	+.173	+.473	+.7256	15.541	1.552	-.493	.011

FILE NAME : IVT121083 **Station 3 (Turbulent)**

****

U = SUM(A(N) * Y^N)

A0= +6.6951E+00 A1= +1.3278E+02 A2= -3.3270E+02 A3= +2.8070E+02

Y	U	UC	% DIFF
.0500	12.7789	12.537	-1.890
.0650	13.7234	13.997	+1.994
.0950	16.4109	16.547	+.830
.1250	18.6029	18.642	+.211
.1650	21.0967	20.807	-1.375
.2050	22.5955	22.351	-1.082
.2550	22.9441	23.574	+2.745
.2850	24.4904	24.011	-1.957
.3250	24.2572	24.342	+.350
.3650	24.3059	24.484	+.734
.4050	24.3280	24.545	+.894
.4450	24.7815	24.633	-.598
.4850	25.2952	24.856	-1.738
.5250	25.0370	25.320	+1.131

****

T = SUM(A(N) * Y^N)

A0= +3.3932E+01 A1= -3.5543E+01 A2= +8.2246E+01 A3= -5.9578E+01

Y	T	TC	% DIFF
.0500	32.3719	32.353	-.060
.0650	31.9660	31.952	-.043
.0950	31.2910	31.246	-.143
.1250	30.5335	30.657	+.406
.1650	29.9972	30.038	+.137
.2050	29.5747	29.588	+.046
.2550	29.5098	29.228	-.954
.2850	29.1041	29.103	-.004
.3250	28.6164	29.022	+1.418
.3650	29.2195	29.018	-.688
.4050	29.1810	29.069	-.383
.4450	29.2107	29.152	-.202
.4850	28.9585	29.243	+.981
.5250	29.4558	29.319	-.463

****

IVT1210S4 **Station 4**

Del 99.5 = .675 [cm] Tw-Tinf = 2.890 [C] Uow = 26.58 [m/S]
Qwall = 178.9 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	17.71	-.31	29.69	2.220	1.304	.297	-1.108	-.379
2	.090	19.23	-.47	29.50	2.061	1.187	.289	-1.070	-.351
3	.160	20.87	-.54	29.30	1.934	1.128	.284	-1.051	-.334
4	.230	22.03	-.58	29.15	1.954	1.076	.309	-.996	-.404
5	.300	23.15	-.67	28.98	1.854	1.000	.320	-.887	-.415
6	.360	23.91	-.68	28.90	1.733	.935	.324	-.677	-.390
7	.430	24.68	-.73	28.76	1.658	.870	.334	-.587	-.402
8	.500	25.28	-.72	28.64	1.437	.863	.313	-.485	-.310
9	.570	25.71	-.70	28.54	1.236	.740	.289	-.357	-.238
10	.640	26.10	-.71	28.44	.958	.664	.250	-.274	-.148
11	.710	26.24	-.66	28.41	1.014	.938	.198	-.667	-.062
12	.790	26.40	-.67	28.41	.709	.644	.178	-.293	-.059
13	.890	26.51	-.66	28.40	.653	.659	.123	-.355	-.017
14	1.040	26.56	-.66	28.37	.212	.180	.060	-.004	-.001

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.140	-.803	+.0531	27.984	-3.271	+.928	.997
2	+.126	-.451	+.0254	25.542	-3.081	+1.025	.997
3	+.125	-.470	+.0284	21.542	-2.757	+1.078	.994
4	+.131	-.601	+.0519	17.893	-2.445	+1.042	.990
5	+.131	-.574	+.0937	14.594	-2.145	+.999	.986
6	+.117	-.598	+.1013	12.045	-1.897	+.913	.981
7	+.121	-.779	+.1354	9.396	-1.620	+.833	.957
8	+.075	-2.348	+.0589	7.098	-1.354	+1.228	.912
9	+.074	-.966	+.1190	5.150	-1.101	+1.025	.823
10	+.051	-1.440	+.0655	3.552	-.860	+1.305	.662
11	+.026	-6.591	+.0136	2.304	-.630	+7.030	.495
12	+.030	-2.639	+.0823	1.307	-.383	+2.822	.332
13	+.012	-3.807	+.0111	.703	-.096	+4.139	.173
14	+.003	-.004	+.0025	1.139	.288	-.397	.034

FILE NAME : IVT121084 Station 4

****

U = SUM(A(N) * Y^N)

A0= +1.6478E+01 A1= +3.1199E+01 A2= -3.3035E+01 A3= +1.1912E+01

Y	U	UC	% DIFF
.0500	17.7063	17.956	+1.413
.0900	19.2255	19.027	-1.035
.1600	20.8715	20.672	-.953
.2300	22.0283	22.051	+.102
.3000	23.1476	23.186	+.164
.3600	23.9121	23.984	+.299
.4300	24.6832	24.732	+.197
.5000	25.2788	25.307	+.112
.5700	25.7090	25.734	+.096
.6400	26.0975	26.036	-.235
.7100	26.2388	26.239	+.001
.7900	26.4017	26.381	-.080
.8900	26.5105	26.475	-.134
1.0400	26.5614	26.593	+.119

****

T = SUM(A(N) * Y^N)

A0= +2.9828E+01 A1= -3.5152E+00 A2= +2.4685E+00 A3= -4.1016E-01

Y	T	TC	% DIFF
.0500	29.6927	29.659	-.115
.0900	29.4982	29.532	+.114
.1600	29.3028	29.327	+.084
.2300	29.1481	29.145	-.009
.3000	28.9804	28.985	+.015
.3600	28.9021	28.854	-.133
.4300	28.7556	28.741	-.056
.5000	28.6449	28.637	-.029
.5700	28.5410	28.551	+.034
.6400	28.4381	28.482	+.155
.7100	28.4035	28.430	+.072
.7900	28.4088	28.390	-.067
.8900	28.3974	28.368	-.111
1.0400	28.3879	28.381	+.048

****

IVT1210S5 Station 5

Del 99.5 = 1.019 [cm] Tw-Tinf = 2.600 [C] Upw = 27.04 [m/S]
Qwall = 180.6 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	17.63	-.49	29.67	2.120	1.240	.244	-1.104	-.292
2	.090	19.01	-.56	29.48	2.010	1.137	.224	-1.028	-.281
3	.140	20.22	-.71	29.34	1.955	1.075	.218	-1.079	-.266
4	.240	21.87	-.83	29.13	1.779	1.022	.217	-.883	-.243
5	.340	23.17	-.92	28.99	1.664	.989	.217	-.887	-.227
6	.440	24.09	-.91	28.85	1.552	.927	.221	-.753	-.207
7	.540	25.00	-1.00	28.70	1.408	.838	.221	-.573	-.190
8	.640	25.71	-1.01	28.58	1.336	.810	.220	-.559	-.177
9	.740	26.36	-1.07	28.43	1.133	.721	.215	-.387	-.154
10	.840	26.77	-.98	28.29	1.028	.763	.200	-.420	-.120
11	.940	27.15	-1.05	28.20	.853	.692	.176	-.342	-.074
12	1.090	27.44	-1.03	28.12	.650	.641	.125	-.317	-.030
13	1.240	27.54	-.99	28.08	.339	.317	.087	-.052	-.008
14	1.390	27.56	-.95	28.06	.202	.168	.063	-.004	-.001

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.133	-.806	+.0633	22.071	-2.294	+.863	1.000
2	+.112	-.370	+.0245	20.655	-2.225	+.985	1.000
3	+.108	-.202	+.0080	18.953	-2.138	+1.125	1.000
4	+.102	-.268	+.0282	15.783	-1.965	+1.078	1.000
5	+.102	-.358	+.0137	12.920	-1.793	+1.208	1.000
6	+.099	-.409	+.0463	10.366	-1.621	+1.194	1.000
7	+.080	-.403	+.0480	8.121	-1.449	+1.271	.997
8	+.074	-1.298	+.0406	6.184	-1.278	+1.562	.983
9	+.063	-1.275	+.0732	4.555	-1.107	+1.486	.949
10	+.047	-2.907	+.0005	3.235	-.937	+2.579	.810
11	+.034	-1.603	+.0093	2.224	-.767	+3.506	.620
12	+.021	-3.022	+.0599	1.285	-.513	+5.916	.260
13	+.006	-.414	+.0061	1.040	-.259	+2.160	.095
14	+.003	-.003	+.0029	1.489	-.007	+.006	.030

FILE NAME : IVT1210S5 Station 5

****

U = SUM(A(N) * Y^N)

A0= +1.6908E+01 A1= +2.3911E+01 A2= -1.8785E+01 A3= +5.1412E+00

Y	U	UC	% DIFF
.0500	17.6348	18.057	+2.398
.0900	19.0078	18.912	-.505
.1400	20.2205	19.902	-1.577
.2400	21.8668	21.636	-1.056
.3400	23.1701	23.068	-.439
.4400	24.0857	24.230	+.600
.5400	24.9956	25.152	+.626
.6400	25.7117	25.865	+.595
.7400	26.3593	26.399	+.151
.8400	26.7687	26.786	+.065
.9400	27.1500	27.056	-.345
1.0900	27.4426	27.311	-.481
1.2400	27.5366	27.476	-.218
1.3900	27.5576	27.657	+.362

****

T = SUM(A(N) * Y^N)

A0= +2.9705E+01 A1= -2.3809E+00 A2= +8.6841E-01 A3= -6.9542E-03

Y	T	TC	% DIFF
.0500	29.6671	29.589	-.265
.0900	29.4780	29.498	+.068
.1400	29.3350	29.389	+.184
.2400	29.1268	29.184	+.196
.3400	28.9933	28.996	+.009
.4400	28.8485	28.825	-.073
.5400	28.7019	28.672	-.104
.6400	28.5758	28.536	-.141
.7400	28.4321	28.416	-.056
.8400	28.2908	28.314	+.083
.9400	28.2003	28.229	+.101
1.0900	28.1206	28.133	+.044
1.2400	28.0793	28.075	-.015
1.3900	28.0639	28.055	-.031

****

IVT1210S6 **Station 6**

Del 99.5 = 1.154 [cm] Tw-Tinf = 2.750 [C] Upw = 28.78 [m/S]
Qwall = 179.7 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	18.25	-.73	29.82	2.265	1.317	.235	-1.274	-.317
2	.085	19.72	-.94	29.60	2.072	1.141	.228	-1.163	-.293
3	.135	20.95	-1.00	29.43	1.975	1.088	.212	-1.027	-.262
4	.235	22.63	-1.14	29.22	1.871	1.029	.210	-1.045	-.243
5	.335	23.84	-1.28	29.09	1.718	1.008	.199	-.954	-.209
6	.435	24.85	-1.37	28.97	1.587	.957	.197	-.811	-.192
7	.535	25.66	-1.38	28.86	1.477	.900	.198	-.714	-.171
8	.635	26.37	-1.39	28.74	1.316	.851	.197	-.548	-.154
9	.785	27.35	-1.44	28.56	1.166	.702	.191	-.399	-.133
10	.935	28.07	-1.46	28.39	1.035	.786	.187	-.455	-.101
11	1.085	28.64	-1.50	28.24	.888	.783	.164	-.480	-.058
12	1.235	28.91	-1.51	28.15	.795	.792	.129	-.508	-.028
13	1.385	28.98	-1.48	28.11	.663	.732	.098	-.444	-.010
14	1.535	29.03	-1.49	28.11	.637	.686	.058	-.408	+.001

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.130	-1.221	+.0811	20.940	-2.299	+1.075	1.000
2	+.123	-.430	+.0341	19.868	-2.224	+1.059	1.000
3	+.105	-.414	+.0363	18.387	-2.119	+1.127	1.000
4	+.110	-.276	+.0298	15.612	-1.917	+1.170	1.000
5	+.095	-.291	+.0256	13.083	-1.725	+1.321	1.000
6	+.095	-.354	+.0301	10.802	-1.545	+1.215	1.000
7	+.091	-.285	+.0289	8.767	-1.376	+1.233	.999
8	+.086	-.312	+.0398	6.979	-1.218	+1.114	.999
9	+.065	-.298	+.0401	4.759	-1.001	+1.284	.976
10	+.056	-2.794	+.0371	3.095	-.809	+2.133	.895
11	+.033	-4.505	-.0276	1.986	-.642	+4.892	.645
12	+.021	-6.352	+.0363	1.432	-.500	+8.429	.327
13	+.009	-5.830	+.0231	1.434	-.382	+12.756	.123
14	+.002	-5.665	-.0062	1.991	-.288	+25.591	.035

FILE NAME : IVT121056 Station 6

****

U = SUM(A(N) * Y^N)

A0= +1.7789E+01 A1= +2.2525E+01 A2= -1.6159E+01 A3= +4.1131E+00

Y	U	UC	% DIFF
.0500	18.2517	18.885	+3.472
.0850	19.7235	19.599	-.629
.1350	20.9520	20.556	-1.892
.2350	22.6295	22.253	-1.662
.3350	23.8413	23.686	-.651
.4350	24.8534	24.878	+.101
.5350	25.6560	25.855	+.775
.6350	26.3691	26.640	+1.027
.7850	27.3454	27.513	+.614
.9350	28.0670	28.095	+.101
1.0850	28.6427	28.470	-.605
1.2350	28.9112	28.719	-.665
1.3850	28.9836	28.927	-.195
1.5350	29.0278	29.177	+.513

****

T = SUM(A(N) * Y^N)

A0= +2.9815E+01 A1= -2.4088E+00 A2= +1.1118E+00 A3= -1.8289E-01

Y	T	TC	% DIFF
.0500	29.8220	29.697	-.419
.0850	29.6001	29.618	+.061
.1350	29.4336	29.510	+.258
.2350	29.2232	29.308	+.290
.3350	29.0908	29.126	+.120
.4350	28.9866	28.982	-.015
.5350	28.8588	28.816	-.147
.6350	28.7391	28.687	-.182
.7850	28.5621	28.521	-.145
.9350	28.3935	28.385	-.030
1.0850	28.2429	28.277	+.119
1.2350	28.1470	28.191	+.157
1.3850	28.1080	28.125	+.062
1.5350	28.1110	28.076	-.126

****

Case 2:

Mean and fluctuating velocity:	IUP0909
Mean temperature:	T0913
Stanton number:	ST0907
Shear stress:	IUV0915
Turbulent heat flux and Pr_t:	IVT0119

FILE: IUP0S0931

STATION: 1

XSTA = .114 [m]
Cf = 2.263E-3
Upw = 16.65 [m/S]
Visc = 1.622E-5 [m^2/S]
REx = 1.174E+5
Del99S = 2.497E-3 [m]

DEL1 = +5.093E-4 [m]
DEL2 = +2.124E-4 [m]
H = 2.398
REdel1 = 5.229E+2
REdel2 = +2.181E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del99S	u'/Upw
1	.008	1.548	2.63	2.76	.030	.758
2	.010	1.857	3.32	3.31	.038	1.098
3	.012	2.289	4.01	4.09	.048	1.411
4	.014	2.647	4.70	4.73	.054	1.667
5	.018	3.043	5.39	5.43	.062	1.874
6	.018	3.621	6.42	6.46	.074	2.212
7	.022	4.323	7.46	7.72	.088	2.675
8	.026	5.025	8.84	8.97	.103	3.074
9	.031	5.574	10.57	10.66	.123	3.837
10	.041	7.907	14.02	14.15	.163	4.705
11	.051	9.600	17.48	17.14	.203	5.382
12	.061	11.182	20.93	19.96	.243	5.866
13	.071	12.446	24.39	22.22	.283	5.743
14	.081	13.358	27.84	23.85	.323	5.783
15	.091	14.217	31.29	25.38	.363	5.087
16	.101	15.004	34.75	26.78	.403	4.551
17	.111	15.407	38.20	27.50	.443	3.935
18	.121	15.808	41.66	28.22	.483	3.276
19	.141	16.242	48.57	28.99	.563	2.038
20	.161	16.500	55.47	29.45	.643	1.334
21	.181	16.444	62.38	29.35	.723	1.092
22	.211	16.537	72.74	29.52	.843	.912
23	.241	16.550	83.11	29.54	.963	.881
24	.271	16.618	93.47	29.66	1.084	.836
25	.301	16.532	103.83	29.51	1.204	.852
26	.441	16.648	152.19	29.72	1.764	.838
27	.431	16.885	148.74	29.74	1.724	.777

FILE: IUP090992

STATION: 2 **(Laminar)**

XSTA = .343 [m]
Cf = 1.608E-3
Upw = 16.29 [m/S]
Visc = 1.623E-5 [m^2/S]
REx = 3.442E+5
Del995 = 3.175E-3 [m]

DEL1 = +8.495E-4 [m]
DEL2 = +3.688E-4 [m]
H = 2.305
REdel1 = 8.526E+2
REdel2 = +3.700E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.009	1.327	2.59	2.88	.028	2.182
2	.011	1.516	3.16	3.28	.035	2.535
3	.013	1.732	3.73	3.75	.041	2.905
4	.015	2.005	4.30	4.34	.048	3.396
5	.017	2.227	4.87	4.82	.054	3.603
6	.019	2.491	5.44	5.40	.060	4.011
7	.021	2.785	6.01	6.05	.067	4.481
8	.023	3.048	6.58	6.60	.073	4.915
9	.026	3.447	7.43	7.47	.082	5.356
10	.029	3.815	8.28	8.27	.092	5.860
11	.033	4.269	9.42	9.25	.104	6.313
12	.043	5.426	12.26	11.76	.136	7.299
13	.053	6.542	15.11	14.17	.167	8.232
14	.063	7.547	17.95	16.35	.199	9.091
15	.073	8.464	20.80	18.34	.230	5.733
16	.088	9.701	25.06	21.02	.278	10.272
17	.103	11.080	29.33	24.01	.325	11.219
18	.118	11.903	33.60	25.79	.372	10.922
19	.133	12.789	37.86	27.67	.419	10.845
20	.153	13.866	43.55	30.04	.482	9.937
21	.173	14.476	49.24	31.37	.545	8.699
22	.193	15.025	54.93	32.55	.608	8.140
23	.213	15.430	60.62	33.43	.671	6.389
24	.233	15.672	66.30	33.96	.734	5.164
25	.263	15.952	74.64	34.52	.829	4.180
26	.293	16.084	83.37	34.85	.923	3.032
27	.323	16.271	91.90	35.25	1.018	2.497
28	.353	16.295	100.43	35.31	1.112	1.649
29	.383	16.238	108.97	35.18	1.207	1.561
30	.433	16.284	123.19	35.28	1.364	1.134

31	.483	16.283	137.41	35.28	1.522	.976
32	.533	16.382	151.63	35.51	1.679	.962
33	.833	16.292	180.07	35.30	1.994	.929
34	.933	16.263	265.40	35.28	2.939	.823

FILE: IUP090952

STATION: 2 **(Turbulent)**

XSTA = .343 [m]
Cf = 4.200E-3
Upw = 16.29 [m/S]
Visc = 1.623E-5 [m^2/S]
REx = 3.442E+5
Del995 = 3.175E-3 [m]

DEL1 = +1.017E-3 [m]
DEL2 = +6.452E-4 [m]
H = 1.576
REdel1 = 1.020E+3
REdel2 = +6.476E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.008	3.233	4.20	4.33	.029	7.855
2	.011	3.682	5.12	4.93	.035	9.696
3	.013	4.254	6.04	5.70	.041	10.650
4	.015	4.645	6.95	6.22	.048	12.189
5	.017	5.489	7.87	7.33	.054	13.311
6	.019	6.146	8.79	8.23	.060	11.980
7	.021	6.474	9.71	8.67	.067	13.763
8	.023	6.648	10.63	8.91	.073	15.039
9	.028	7.477	12.01	10.02	.092	14.419
10	.029	7.159	13.39	9.59	.092	14.887
11	.033	7.373	15.23	9.88	.104	11.782
12	.043	8.740	19.83	11.71	.136	12.479
13	.053	9.052	24.43	12.13	.167	14.958
14	.063	9.861	29.03	13.21	.199	14.570
15	.073	9.423	33.63	12.62	.230	16.584
16	.088	10.584	40.53	14.18	.278	15.878
17	.103	11.218	47.43	15.03	.325	12.956
18	.118	11.556	54.33	15.48	.372	15.093
19	.133	11.551	61.23	15.48	.419	14.636
20	.153	12.893	70.43	17.27	.482	12.387
21	.173	12.759	79.63	17.09	.545	13.691
22	.193	14.015	88.83	18.78	.608	10.295
23	.213	14.119	98.03	18.92	.671	11.852
24	.233	13.715	107.22	18.38	.734	14.975
25	.263	14.197	121.02	19.02	.829	9.357
26	.293	14.455	134.82	19.37	.923	12.901
27	.323	15.249	148.62	20.43	1.018	8.079
28	.353	15.162	162.42	20.31	1.112	8.664
29	.383	15.464	176.22	20.72	1.207	8.983
30	.433	15.160	199.21	20.31	1.364	8.495

31	.483	15.810	222.21	21.16	1.522	5.631
32	.533	15.872	245.21	21.27	1.679	2.083
33	.633	16.038	291.21	21.49	1.994	3.078
34	.933	16.604	429.19	22.27	2.939	.872

FILE: IUP090992

STATION: 2 **(Transitional)**

XSTA = .343 [m]
Cf = 1.700E-3
Upw = 16.29 [m/S]
Visc = 1.623E-5 [m^2/S]
REx = 3.442E+5
Del995 = 3.175E-3 [m]

DEL1 = +8.518E-4 [m]
DEL2 = +3.778E-4 [m]
H = 2.256
REdel1 = 8.549E+2
REdel2 = +3.790E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.009	1.38E	2.67	2.92	.029	3.249
2	.011	1.592	3.25	3.39	.035	3.926
3	.013	1.809	3.84	3.81	.041	4.322
4	.015	2.120	4.42	4.46	.048	5.325
5	.017	2.327	5.01	4.90	.054	5.598
6	.019	2.650	5.60	5.58	.060	6.521
7	.021	2.944	6.18	6.20	.067	6.832
8	.023	3.213	6.77	6.77	.073	7.426
9	.026	3.614	7.84	7.61	.082	7.772
10	.029	3.951	8.52	8.32	.092	7.628
11	.033	4.398	9.69	9.26	.104	7.638
12	.043	5.594	12.62	11.78	.136	8.845
13	.053	6.665	15.54	14.04	.167	9.307
14	.063	7.655	18.47	16.12	.199	9.875
15	.073	8.516	21.40	17.93	.230	10.305
16	.088	9.741	25.79	20.51	.278	10.646
17	.103	11.066	30.18	23.35	.325	11.298
18	.118	11.885	34.57	25.03	.372	11.193
19	.133	12.714	38.95	26.77	.419	11.147
20	.153	13.819	44.81	29.10	.482	10.148
21	.173	14.418	50.66	30.36	.545	9.124
22	.193	14.980	56.51	31.55	.608	8.341
23	.213	15.382	62.36	32.38	.671	6.813
24	.233	15.601	68.22	32.85	.734	6.220
25	.263	15.878	77.00	33.44	.829	4.782
26	.293	16.037	85.77	33.77	.923	4.045
27	.323	16.245	94.55	34.21	1.018	2.948
28	.353	16.270	103.33	34.26	1.112	2.452
29	.383	16.223	112.11	34.16	1.207	1.938
30	.433	16.268	126.74	34.26	1.364	1.721

31	.483	16.262	141.37	34.29	1.522	1.038
32	.533	16.382	156.00	34.52	1.679	.988
33	.633	16.292	185.27	34.31	1.994	.939
34	.933	16.283	273.05	34.29	2.939	.829

FILE: IUPC90993A

STATION: **3A (Laminar)**

XSTA = .572 [m]
Cf = 1.695E-3
Upw = 12.29 [m/S]
Visc = 1.626E-5 [m^2/S]
REx = 4.322E+5
Del995 = 8.726E-3 [m]

DEL1 = +1.277E-3 [m]
DEL2 = +6.265E-4 [m]
H = 2.038
REdel1 = 9.657E+2
REdel2 = +4.737E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.014	1.151	3.07	3.22	.016	3.541
2	.016	1.336	3.51	3.73	.018	4.441
3	.018	1.451	3.95	4.06	.021	4.599
4	.021	1.679	4.61	4.69	.024	5.074
5	.024	1.911	5.27	5.34	.027	5.676
6	.027	2.176	5.93	6.08	.031	6.519
7	.030	2.402	6.59	6.71	.034	7.092
8	.034	2.746	7.47	7.67	.039	7.594
9	.039	2.979	8.35	8.32	.043	8.057
10	.048	3.644	10.56	10.19	.055	9.148
11	.058	4.324	12.76	12.08	.066	10.025
12	.078	5.406	17.16	15.11	.089	11.123
13	.098	6.383	21.56	17.87	.112	12.285
14	.118	7.330	25.97	20.48	.135	13.463
15	.148	8.366	32.57	23.43	.170	13.381
16	.178	9.259	39.17	25.87	.204	12.585
17	.228	10.434	50.18	29.16	.261	10.633
18	.278	11.032	61.19	30.83	.319	9.120
19	.328	11.557	72.20	32.29	.376	7.170
20	.378	11.819	83.20	33.03	.433	5.616
21	.478	12.035	105.22	33.64	.548	3.189
22	.578	12.109	127.23	33.84	.662	1.930
23	.678	12.230	149.24	34.15	.777	1.717
24	.828	12.265	182.27	34.27	.949	1.292
25	.978	12.260	215.29	34.26	1.121	1.129
26	1.178	12.262	259.31	34.27	1.350	.947
27	1.378	12.267	303.34	34.28	1.579	.983
28	1.678	12.297	369.38	34.36	1.923	.99
29	1.978	12.288	435.43	34.34	2.267	.918

FILE: IUP0908S3A

STATION: **3A (Turbulent)**

XSTA = .572 [m]
Cf = 4.100E-3
Upw = 12.29 [m/S]
Visc = 1.62EE-5 [m^2/S]
RE. = 4.322E+5
Del995 = 8.727E-3 [m]

DEL1 = +1.685E-3 [m]
DEL2 = +1.150E-3 [m]
H = 1.465
REdel1 = 1.274E+3
REdel2 = +8.693E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.002	1.716	2.74	3.08	.029	4.515
2	.010	1.858	3.42	3.34	.011	5.396
3	.012	2.241	4.11	4.03	.014	6.849
4	.014	2.552	4.79	4.59	.016	8.268
5	.016	2.942	5.48	5.29	.018	9.045
6	.018	3.225	6.16	5.79	.021	10.580
7	.021	3.785	7.19	6.80	.024	11.136
8	.024	4.167	8.22	7.49	.028	11.668
9	.027	4.591	9.24	8.25	.031	13.273
10	.030	4.810	10.27	8.64	.034	13.423
11	.034	5.243	11.64	9.42	.039	14.087
12	.036	5.487	13.01	9.86	.044	13.815
13	.046	6.221	16.43	11.18	.055	14.449
14	.058	6.767	19.86	12.16	.066	14.212
15	.078	7.412	26.71	13.32	.069	13.695
16	.098	7.827	33.55	14.06	.112	13.456
17	.118	8.184	40.40	14.71	.135	13.806
18	.148	8.607	50.67	15.47	.170	12.806
19	.178	9.038	60.94	16.24	.204	12.527
20	.228	9.404	78.06	16.90	.261	12.426
21	.278	9.696	95.18	17.42	.319	11.780
22	.328	10.159	112.30	18.25	.376	11.416
23	.378	10.505	129.42	18.87	.433	10.815
24	.478	10.938	163.66	19.65	.548	9.363
25	.578	11.218	197.90	20.16	.662	7.874
26	.678	11.412	232.13	20.50	.777	6.262
27	.828	11.574	283.49	20.79	.949	7.229
28	.978	11.652	334.85	20.93	1.121	5.337
29	1.178	11.829	403.32	21.25	1.350	4.002
30	1.378	0.000	471.80	0.00	1.579	0.000

FILE: IUP0909S3A

STATION: **3A (Transitional)**

XSTA = .572 [m]
Cf = 2.600E-3
Upw = 12.29 [m/S]
Visc = 1.62EE-5 [m^2/S]
RE$_x$ = 4.322E+5
Del995 = 8.726E-3 [m]

DEL1 = +1.330E-3 [m]
DEL2 = +7.541E-4 [m]
H = 1.764
REdel1 = 1.00EE+3
REdel2 = +5.702E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.014	1.660	3.80	3.75	.016	7.934
2	.016	1.952	4.35	4.40	.018	9.156
3	.018	2.145	4.89	4.84	.021	10.305
4	.021	2.513	5.71	5.67	.024	11.613
5	.024	2.783	6.53	6.28	.027	12.339
6	.027	3.105	7.35	7.00	.031	13.611
7	.030	3.338	8.17	7.53	.034	13.857
8	.034	3.815	9.26	8.61	.039	14.795
9	.038	4.044	10.35	9.12	.043	14.638
10	.048	4.696	13.07	10.59	.055	15.520
11	.058	5.331	15.80	12.03	.066	15.417
12	.076	6.253	21.25	14.11	.089	14.671
13	.098	6.995	26.71	15.78	.112	14.013
14	.118	7.696	32.16	17.36	.135	14.048
15	.148	8.478	40.34	19.13	.170	13.173
16	.178	9.168	48.52	20.68	.204	12.646
17	.228	10.044	63.15	22.66	.261	12.155
18	.278	10.554	75.78	23.81	.319	11.410
19	.328	11.080	89.41	25.00	.376	10.381
20	.378	11.455	103.05	25.85	.433	8.634
21	.478	11.757	130.31	26.53	.549	6.715
22	.578	11.965	157.58	27.00	.662	4.503
23	.678	12.131	184.84	27.37	.777	3.779
24	.828	12.223	225.74	27.58	.949	2.558
25	.979	12.250	266.64	27.64	1.121	1.451
26	1.178	12.260	321.17	27.66	1.350	1.020
27	1.378	12.267	375.70	27.68	1.579	.973
28	1.678	12.297	457.49	27.75	1.923	.991
29	1.978	12.280	539.28	27.72	2.267	.918

FILE: IUP090953

STATION: 3 **(Laminar)**

XSTA = .572 [m]
Cf = 1.757E-3
Upw = 16.18 [m/S]
Visc = 1.625E-5 [m^2/S]
REx = 5.691E+5
Del995 = 8.938E-3 [m]

DEL1 = +9.704E-4 [m]
DEL2 = +4.904E-4 [m]
H = 1.979
REdel1 = 9.663E+2
REdel2 = +4.883E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.010	1.547	3.10	3.23	.012	3.077
2	.012	1.771	3.69	3.69	.014	4.000
3	.014	2.029	4.28	4.23	.016	4.485
4	.016	2.297	4.87	4.79	.018	5.050
5	.018	2.663	5.46	5.55	.021	5.121
6	.020	2.908	6.05	6.06	.023	6.258
7	.022	3.104	6.64	6.47	.025	6.133
8	.024	3.469	7.23	7.23	.027	6.595
9	.026	3.710	7.82	7.74	.030	6.853
10	.029	4.270	8.71	8.90	.033	7.828
11	.032	4.470	9.59	9.32	.036	7.586
12	.036	4.905	10.77	10.23	.041	8.896
13	.041	5.682	12.25	11.85	.046	9.871
14	.051	6.639	15.20	13.85	.058	10.863
15	.061	7.688	18.15	16.03	.069	11.360
16	.071	8.459	21.10	17.64	.080	12.739
17	.086	9.683	25.53	20.21	.097	13.336
18	.106	10.781	31.43	22.48	.119	13.176
19	.136	12.298	40.29	25.65	.153	12.478
20	.166	13.421	49.14	27.99	.186	11.328
21	.196	14.129	58.00	29.46	.220	10.423
22	.236	15.071	69.80	31.43	.265	7.508
23	.286	15.565	84.56	32.46	.321	5.747
24	.336	15.817	99.33	33.00	.376	4.123
25	.386	15.951	114.09	33.27	.432	3.407
26	.486	16.014	143.59	33.40	.544	1.809
27	.586	16.106	173.11	33.59	.656	1.703
28	.686	16.089	202.62	33.55	.768	1.269
29	.836	16.098	246.89	33.57	.936	1.175
30	.986	16.214	291.17	33.81	1.104	1.090

31	1.136	16.123	335.44	33.62	1.272	1.041
32	1.285	16.106	379.71	33.59	1.439	.993
33	1.486	16.222	438.74	33.83	1.663	.960
34	1.686	16.127	497.77	33.63	1.867	.918
35	1.985	16.230	586.32	33.85	2.223	.954

FILE: IUP090953

STATION: 3 **(Turbulent)**

XSTA = .572 [m]
Cf = 4.500E-3
Upw = 16.18 [m/S]
Visc = 1.625E-5 [m^2/S]
REx = 5.691E+5
Del995 = 8.913E-3 [m]

DEL1 = +1.420E-3 [m]
DEL2 = +1.014E-3 [m]
H = 1.401
REdel1 = 1.414E+3
REdel2 = +1.009E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.008	2.819	3.78	3.67	.009	5.484
2	.010	3.390	4.72	4.42	.011	7.153
3	.012	4.019	5.67	5.24	.013	8.456
4	.014	4.464	6.61	5.82	.016	9.166
5	.016	5.237	7.56	6.82	.018	10.228
6	.018	5.548	8.50	7.23	.020	10.610
7	.020	6.057	9.45	7.89	.022	11.055
8	.022	6.626	10.39	8.63	.025	11.517
9	.024	6.720	11.34	8.76	.027	12.133
10	.027	7.394	12.75	9.63	.030	11.769
11	.030	7.650	14.17	10.02	.034	12.112
12	.034	8.132	16.06	10.60	.038	12.129
13	.039	8.567	18.42	11.18	.044	12.193
14	.049	9.373	23.15	12.21	.055	11.770
15	.059	9.909	27.87	12.91	.066	11.679
16	.069	10.275	32.59	13.39	.077	11.227
17	.084	10.757	39.68	14.02	.094	11.052
18	.104	11.118	49.12	14.49	.117	10.671
19	.134	11.706	63.30	15.26	.150	10.637
20	.164	12.220	77.47	15.92	.184	10.449
21	.194	12.580	91.64	16.39	.218	10.115
22	.234	13.124	110.53	17.10	.263	10.288
23	.284	13.654	134.15	17.79	.319	9.735
24	.334	14.042	157.77	18.30	.375	9.703
25	.384	14.350	181.38	18.70	.431	8.885
26	.484	14.836	228.62	19.33	.543	7.609
27	.584	15.204	275.85	19.81	.655	6.709
28	.684	15.388	323.09	19.92	.767	6.114
29	.834	15.610	393.94	20.34	.936	5.052
30	.984	15.669	464.80	20.44	1.104	4.787

31	1.134	15.717	535.65	20.48	1.272	3.656
32	1.284	15.767	606.50	20.55	1.441	3.444
33	1.484	0.000	700.97	0.00	1.665	0.000
34	1.684	16.057	795.44	20.92	1.889	.667
35	1.984	0.000	937.15	0.00	2.226	0.000

FILE: IUF090593

STATION: 3 **(Transitional)**

XSTA	= .572 [m]	DEL1	= +1.152E-3 [m]
Cf	= 4.000E-3	DEL2	= +7.583E-4 [m]
Upw	= 18.18 [m/S]	H	= 1.523
Visc	= 1.625E-5 [m^2/S]	REdel1	= 1.147E+3
REx	= 5.891E+5	REdel2	= +7.531E+2
Del995	= 8.913E-3 [m]		

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.008	2.454	3.56	3.39	.009	6.054
2	.010	2.970	4.45	4.11	.011	7.629
3	.012	3.505	5.34	4.84	.013	9.339
4	.014	3.970	6.23	5.49	.016	10.115
5	.016	4.634	7.13	6.40	.018	11.474
6	.018	4.839	8.02	6.69	.020	12.049
7	.020	5.353	8.91	7.40	.022	12.749
8	.022	5.851	9.80	8.09	.025	13.465
9	.024	6.013	10.69	8.31	.027	13.633
10	.027	6.669	12.02	9.22	.030	13.650
11	.030	6.995	13.36	9.67	.034	13.948
12	.034	7.406	15.14	10.24	.038	14.183
13	.039	7.919	17.37	10.94	.044	13.926
14	.048	8.751	21.82	12.09	.055	13.565
15	.059	9.364	26.27	12.97	.066	12.966
16	.069	9.862	30.73	13.63	.077	12.504
17	.084	10.499	37.41	14.51	.094	11.977
18	.104	11.038	46.32	15.26	.117	11.491
19	.134	11.845	59.68	16.37	.150	11.195
20	.164	12.516	73.04	17.30	.184	11.140
21	.194	13.008	86.40	17.98	.218	11.080
22	.234	13.662	104.21	18.88	.263	11.005
23	.284	14.250	126.48	19.70	.319	10.270
24	.334	14.595	148.74	20.16	.375	9.819
25	.384	14.891	171.01	20.58	.431	8.825
26	.484	15.379	215.54	21.26	.543	6.771
27	.584	15.766	260.08	21.79	.655	5.103
28	.684	15.877	304.61	21.94	.767	3.939
29	.834	16.041	371.41	22.17	.938	2.284
30	.994	16.190	438.21	22.38	1.104	1.835

31	1.134	16.114	505.01	22.27	1.272	1.224
32	1.284	16.105	571.82	22.26	1.441	1.028
33	1.484	16.222	660.68	22.42	1.665	.982
34	1.684	16.127	749.95	22.29	1.889	.918
35	1.984	16.230	883.55	22.43	2.226	.954

FILE: IUP090954

STATION: 4 **(Laminar)**

XSTA = .800 [m]
Cf = 2.200E-3
Upw = 16.38 [m/S]
Visc = 1.627E-5 [m^2/S]
REx = 8.057E+5
Del995 = 1.339E-2 [m]

DEL1 = +9.222E-4 [m]
DEL2 = +5.424E-4 [m]
H = 1.700
REdel1 = 9.286E+2
REdel2 = +5.462E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.005	1.666	1.84	3.07	.004	1.738
2	.009	2.015	2.64	3.71	.006	3.033
3	.012	2.559	3.84	4.71	.009	4.432
4	.016	2.847	5.18	5.24	.012	3.772
5	.021	3.516	6.85	6.47	.015	5.195
6	.025	4.708	8.52	8.66	.019	5.084
7	.030	5.535	10.19	10.19	.023	6.840
8	.036	6.611	11.86	12.17	.027	7.451
9	.045	7.373	15.20	13.57	.034	9.520
10	.056	8.918	18.54	16.43	.041	10.755
11	.069	8.998	21.88	16.55	.049	9.885
12	.078	10.185	25.21	18.75	.058	14.544
13	.096	11.635	31.89	21.40	.071	8.545
14	.128	13.068	41.91	24.05	.094	12.688
15	.155	14.169	51.93	26.06	.116	9.739
16	.186	14.801	61.95	27.25	.139	9.572
17	.288	15.843	95.35	29.16	.213	5.448
18	.385	15.800	128.75	29.09	.288	4.445
19	.485	15.873	162.14	29.40	.363	2.869
20	.635	16.059	212.24	29.56	.475	2.953
21	.786	16.187	262.33	29.80	.587	2.472
22	.985	16.269	329.13	29.95	.736	1.815
23	1.186	16.311	395.92	30.03	.886	1.514
24	1.386	16.362	462.72	30.12	1.035	1.341
25	1.585	16.373	529.51	30.14	1.184	1.088
26	1.785	16.377	596.31	30.15	1.333	1.043
27	1.986	16.389	663.10	30.17	1.483	.984
28	2.186	16.282	729.89	29.99	1.632	.938
29	2.486	16.383	830.09	30.16	1.856	.874
30	2.786	16.374	930.28	30.14	2.080	.944

FILE: IUP090984

STATION: 4 **(Turbulent)**

XSTA = .800 [m]
Cf = 4.250E-3
Upw = 16.38 [m/s]
Visc = 1.627E-5 [m^2/s]
RE$_x$ = 8.057E+5
Del995 = 1.338E-2 [m]

DEL1 = +2.121E-3 [m]
DEL2 = +1.614E-3 [m]
H = 1.314
REdel1 = 2.138E+3
REdel2 = +1.625E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.025	2.124	2.55	2.81	.004	3.429
2	.009	2.684	3.95	3.82	.006	5.279
3	.012	3.676	5.34	4.87	.009	6.981
4	.016	4.729	7.19	6.26	.012	8.501
5	.021	5.838	9.52	7.73	.015	9.875
6	.025	6.861	11.84	9.09	.019	10.609
7	.030	7.575	14.16	10.03	.023	10.804
8	.036	8.270	16.48	10.95	.027	10.758
9	.045	9.198	21.12	12.18	.034	10.683
10	.056	9.766	25.76	12.93	.041	10.103
11	.066	10.188	30.40	13.47	.049	10.077
12	.076	10.452	35.05	13.84	.056	9.482
13	.096	10.888	44.33	14.55	.071	9.070
14	.126	11.529	58.26	15.27	.094	8.582
15	.155	11.881	72.18	15.71	.116	8.519
16	.186	12.231	86.11	16.20	.139	8.391
17	.286	13.046	132.53	17.28	.213	8.364
18	.385	13.703	178.94	18.15	.288	8.033
19	.485	14.245	225.36	18.87	.363	7.523
20	.635	14.753	294.59	19.54	.475	6.783
21	.786	15.142	364.62	20.06	.587	6.033
22	.985	15.387	457.46	20.38	.736	5.427
23	1.186	15.557	550.29	20.74	.886	4.838
24	1.386	15.714	643.13	20.81	1.036	4.555
25	1.585	15.749	735.97	20.86	1.184	3.712
26	1.785	15.876	828.80	21.03	1.333	3.886
27	1.986	15.928	921.64	21.10	1.483	3.022
28	2.186	15.588	1014.48	20.62	1.632	1.933
29	2.486	0.000	1153.73	0.00	1.856	0.000
30	2.786	0.000	1291.99	0.00	2.080	0.000

FILE: IUP090954

STATION: 4 **(Transitional)**

XSTA = .600 [m]
Cf = 4.200E-3
Upw = 16.38 [m/S]
Visc = 1.627E-5 [m^2/S]
REx = 8.057E+5
Del995 = 1.339E-2 [m]

DEL1 = +1.662E-3 [m]
DEL2 = +1.188E-3 [m]
H = 1.399
REdel1 = 1.673E+3
REdel2 = +1.196E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.005	2.066	2.54	2.75	.004	3.393
2	.009	2.851	3.92	3.80	.006	5.30E
3	.012	3.647	5.31	4.86	.009	7.011
4	.016	4.703	7.15	6.27	.012	8.556
5	.021	5.803	9.46	7.73	.015	9.971
6	.025	6.837	11.77	9.11	.019	10.65[illegible]
7	.030	7.556	14.07	10.07	.023	10.655
8	.036	8.254	16.38	11.00	.027	10.773
9	.045	9.190	21.00	12.24	.034	10.682
10	.056	9.760	25.61	13.00	.041	10.114
11	.065	10.161	30.22	13.54	.049	10.099
12	.076	10.449	34.84	13.92	.056	9.532
13	.096	10.992	44.07	14.64	.071	9.076
14	.126	11.541	57.91	15.38	.094	8.634
15	.155	11.886	71.76	15.84	.116	8.650
16	.186	12.254	85.60	16.33	.139	8.529
17	.286	13.051	131.74	17.44	.213	8.579
18	.385	13.760	177.89	18.33	.288	8.217
19	.485	14.389	224.03	19.14	.363	7.761
20	.635	15.039	293.25	20.04	.475	6.990
21	.785	15.606	362.47	20.79	.587	5.741
22	.985	15.989	454.76	21.30	.738	4.225
23	1.186	16.216	547.05	21.60	.885	2.716
24	1.386	16.331	639.34	21.75	1.035	1.988
25	1.585	16.380	731.63	21.80	1.184	1.312
26	1.785	16.377	823.91	21.81	1.333	1.131
27	1.986	16.387	916.20	21.83	1.483	.994
28	2.186	16.291	1008.49	21.70	1.632	.947
29	2.486	16.365	1146.53	21.83	1.856	.974
30	2.786	16.374	1285.36	21.82	2.080	.944

FILE: IUP090995

STATION: 5

XSTA = 1.029 [m]
Cf = 4.050E-3
Upw = 16.81 [m/S]
Visc = 1.629E-5 [m^2/S]
REx = 1.0E2E+6
Del995 = 1.749E-2 [m]

DEL1 = +2.093E-3 [m]
DEL2 = +1.538E-3 [m]
H = 1.361
REdel1 = 2.160E+3
REdel2 = +1.587E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.006	2.319	2.93	3.07	.004	4.051
2	.008	2.925	3.86	3.87	.005	5.313
3	.010	3.435	4.76	4.54	.006	6.209
4	.014	4.597	6.64	6.08	.008	8.004
5	.019	5.836	8.96	7.72	.011	9.452
6	.024	6.732	11.29	8.90	.014	10.052
7	.034	8.228	15.93	10.88	.020	10.610
8	.044	9.064	20.58	12.01	.025	10.302
9	.054	9.752	25.22	12.88	.031	9.695
10	.074	10.525	34.51	13.91	.042	9.183
11	.094	11.041	43.80	14.59	.054	8.804
12	.134	11.610	62.38	15.35	.077	8.033
13	.194	12.319	90.25	16.28	.111	7.850
14	.294	13.054	136.70	17.26	.168	7.604
15	.394	13.685	183.15	18.09	.225	7.650
16	.494	14.261	229.60	18.85	.283	7.359
17	.644	14.830	299.27	19.68	.368	7.147
18	.844	15.493	392.17	20.47	.483	6.200
19	1.044	15.958	485.08	21.11	.597	5.101
20	1.244	16.380	577.98	21.65	.711	4.111
21	1.444	16.501	670.86	21.81	.826	3.051
22	1.644	16.706	763.75	22.09	.940	2.254
23	1.994	16.752	879.88	22.15	1.083	1.525
24	2.144	16.702	996.00	22.08	1.226	1.182
25	2.444	16.615	1135.34	22.23	1.398	1.085
26	2.744	16.802	1274.69	22.21	1.569	1.006

FILE: T0913S1

STATION: 1

Xsta = .114 [m]
Tw = 34.07 [C]
Tinf = 29.55 [C]
Qw = 1.734E+2 [W/m^2]
Yeff = +5.000E-5 [m]
Cond = 13.20

Del-ther = 1.589E-3 [m]
Del-enth = 1.604E-4 [m]
Del-cond = 6.857E-4 [m]
Re-enth = 1.625E+2
Prt = 0.000
Qadded = 13.73 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.005	0.000	0.00	0.00	0.000	0.000
2	+.007	33.646	2.36	1.57	.044	.095
3	+.009	33.556	2.70	1.90	.050	.115
4	+.009	33.489	3.04	2.15	.057	.130
5	+.010	33.374	3.38	2.58	.063	.156
6	+.012	33.209	4.05	3.18	.076	.193
7	+.014	33.069	4.73	3.71	.088	.224
8	+.016	32.898	5.42	4.34	.101	.263
9	+.018	32.753	6.10	4.87	.113	.294
10	+.020	32.642	6.78	5.29	.126	.319
11	+.022	32.457	7.46	5.82	.138	.351
12	+.026	32.250	8.83	6.74	.164	.407
13	+.030	31.996	10.21	7.69	.189	.463
14	+.034	31.820	11.58	8.34	.214	.503
15	+.038	31.624	12.96	9.07	.239	.546
16	+.042	31.445	14.34	9.74	.264	.586
17	+.046	31.273	15.72	10.38	.289	.624
18	+.051	31.084	17.45	11.09	.321	.667
19	+.056	30.905	19.18	11.76	.352	.708
20	+.061	30.741	20.91	12.38	.384	.743
21	+.066	30.594	22.64	12.93	.415	.776
22	+.071	30.452	24.38	13.46	.447	.808
23	+.081	30.227	27.85	14.31	.510	.858
24	+.091	30.061	31.31	14.94	.573	.895
25	+.101	29.917	34.78	15.48	.636	.927
26	+.111	29.815	38.25	15.86	.699	.950
27	+.121	29.743	41.71	16.14	.761	.965
28	+.141	29.647	48.64	16.50	.887	.987
29	+.161	29.607	55.55	16.65	1.013	.996
30	+.181	29.591	62.49	16.71	1.139	.999
31	+.201	29.591	69.35	16.71	1.265	.999
32	+.231	29.590	79.71	16.71	1.454	1.000
33	+.291	29.588	100.41	16.72	1.831	1.000
34	+.391	29.589	134.91	16.72	2.461	1.000

FILE: T091382

STATION: 2

Xsta = .343 [m]
Tw = 37.25 [C]
Tinf = 29.44 [C]
Qw = 1.548E+2 [W/m^2]
Yeff = +1.000E-4 [m]
Cond = 13.20

Del-ther = 3.548E-3 [m]
Del-enth = 3.713E-4 [m]
Del-cond = 1.331E-3 [m]
Re-enth = 3.647E+2
Prt = 0.000
Qadded = 53.39 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.010	0.000	0.00	0.00	0.000	0.000
2	+.012	36.483	3.38	2.65	.034	.099
3	+.014	36.418	3.94	2.87	.039	.107
4	+.016	36.222	4.51	3.55	.045	.132
5	+.018	36.049	5.08	4.18	.051	.155
6	+.020	35.922	5.65	4.60	.056	.171
7	+.022	35.771	6.21	5.13	.062	.191
8	+.024	35.634	6.79	5.60	.068	.208
9	+.027	35.390	7.64	6.45	.076	.240
10	+.030	35.189	8.50	7.16	.085	.266
11	+.034	35.046	9.64	7.66	.098	.284
12	+.039	34.719	11.08	8.81	.110	.327
13	+.044	34.509	12.52	9.55	.124	.354
14	+.049	34.221	13.96	10.58	.138	.391
15	+.054	33.994	15.41	11.36	.152	.420
16	+.064	33.539	18.31	12.97	.180	.479
17	+.074	33.125	21.22	14.43	.209	.533
18	+.084	32.689	24.15	15.98	.237	.589
19	+.094	32.291	27.09	17.40	.265	.640
20	+.104	32.008	30.02	18.41	.293	.677
21	+.114	31.664	32.97	19.64	.322	.721
22	+.124	31.395	35.91	20.60	.350	.756
23	+.134	31.124	38.87	21.58	.378	.791
24	+.144	30.853	41.84	22.55	.406	.826
25	+.159	30.545	46.28	23.66	.448	.866
26	+.174	30.346	50.70	24.38	.491	.892
27	+.194	30.137	56.60	25.14	.547	.919
28	+.214	29.903	62.52	25.98	.604	.949
29	+.244	29.748	71.35	26.55	.688	.969
30	+.274	29.666	80.15	26.77	.773	.977
31	+.304	29.610	88.98	27.05	.857	.987
32	+.334	29.563	97.77	27.22	.942	.993
33	+.364	29.537	106.57	27.31	1.027	.996

34	+.424	29.516	124.15	27.39	1.196	.999
35	+.524	29.507	153.44	27.42	1.478	1.000
36	+.624	29.505	182.72	27.43	1.760	1.000
37	+.774	29.506	226.64	27.42	2.183	1.000
38	+.974	29.507	285.21	27.42	2.747	1.000

FILE: T0913B3A

STATION: **3A**

Xsta = .572 [m]
Tw = 36.05 [C]
Tinf = 29.63 [C]
Qw = 1.220E+2 [W/m^2]
Yeff = +1.800E-4 [m]
Cond = 13.20

Del-ther = 9.271E-3 [m]
Del-enth = 8.832E-4 [m]
Del-cond = 1.399E-3 [m]
Re-enth = 6.391E+2
Prt = 0.000
Qadded = 77.49 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.018	0.000	0.00	0.00	0.000	0.000
2	+.020	35.275	5.27	3.34	.022	.127
3	+.022	35.103	5.80	4.05	.024	.154
4	+.024	34.975	6.33	4.57	.026	.174
5	+.026	34.804	6.86	5.28	.028	.200
6	+.028	34.757	7.39	5.47	.030	.207
7	+.030	34.640	7.93	5.95	.032	.226
8	+.035	34.326	9.27	7.25	.038	.275
9	+.040	34.118	10.60	8.11	.043	.307
10	+.045	33.864	11.95	9.17	.049	.346
11	+.050	33.803	13.28	9.42	.054	.356
12	+.055	33.715	14.61	9.79	.059	.370
13	+.065	33.496	17.29	10.70	.070	.404
14	+.075	33.259	19.98	11.68	.081	.441
15	+.085	33.149	22.66	12.14	.092	.458
16	+.105	32.659	26.06	14.19	.113	.534
17	+.125	32.431	33.45	15.14	.135	.570
18	+.145	32.151	38.87	16.31	.156	.613
19	+.165	31.834	44.31	17.65	.178	.663
20	+.185	31.556	49.76	18.82	.200	.706
21	+.215	31.216	57.94	20.25	.232	.759
22	+.245	30.995	66.11	21.18	.264	.794
23	+.265	30.877	71.56	21.68	.286	.812
24	+.295	30.578	79.80	22.95	.318	.858
25	+.325	30.438	87.99	23.54	.351	.880
26	+.365	30.238	98.93	24.39	.394	.911
27	+.415	30.075	112.59	25.09	.448	.937
28	+.465	29.993	126.21	25.43	.502	.950
29	+.515	29.898	139.86	25.85	.555	.965
30	+.565	29.893	153.45	25.86	.609	.965
31	+.665	29.764	180.74	26.41	.717	.985
32	+.765	29.739	207.95	26.52	.825	.989
33	+.865	29.725	235.15	26.58	.933	.991

34	+.985	29.688	262.39	26.73	1.041	.997
35	+1.185	29.673	318.80	26.80	1.257	.999
36	+1.385	29.674	371.19	26.79	1.472	.998
37	+1.685	29.667	452.79	26.82	1.796	1.000
38	+1.985	29.672	534.35	26.80	2.120	1.000

FILE: T091353

STATION: 3

Xsta = .572 [m]
Tw = 34.48 [C]
Tinf = 29.35 [C]
Qw = 1.698E+2 [W/m^2]
Yeff = +1.100E-4 [m]
Cond = 13.20

Del-ther = 9.753E-3 [m]
Del-enth = 1.027E-3 [m]
Del-cond = 7.888E-4 [m]
Re-enth = 1.010E+3
Prt = .950
Qadded = 98.23 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del98E	DT/DTw
1	+.011	0.000	0.00	0.00	0.000	0.000
2	+.013	33.724	5.66	3.74	.013	.152
3	+.015	33.567	6.54	4.50	.015	.183
4	+.017	33.408	7.42	5.27	.017	.215
5	+.019	33.321	8.29	5.70	.019	.232
6	+.021	33.138	9.17	6.59	.022	.268
7	+.023	33.048	10.05	7.03	.024	.286
8	+.025	32.982	10.93	7.35	.026	.299
9	+.030	32.689	13.14	8.88	.031	.361
10	+.035	32.560	15.34	9.42	.036	.383
11	+.045	32.302	19.75	10.68	.046	.434
12	+.055	32.116	24.17	11.59	.056	.470
13	+.065	31.947	28.59	12.42	.067	.504
14	+.075	31.819	33.02	13.05	.077	.529
15	+.095	31.590	41.88	14.23	.097	.576
16	+.115	31.375	50.75	15.24	.118	.617
17	+.135	31.228	59.63	15.97	.138	.648
18	+.155	31.051	68.54	16.84	.159	.681
19	+.185	30.810	81.92	18.04	.190	.729
20	+.215	30.674	95.28	18.71	.220	.756
21	+.245	30.462	108.70	19.76	.251	.797
22	+.295	30.304	131.01	20.55	.302	.829
23	+.345	30.136	153.36	21.38	.354	.862
24	+.445	29.912	198.07	22.49	.456	.906
25	+.545	29.733	242.84	23.39	.559	.942
26	+.645	29.623	287.58	23.94	.661	.964
27	+.745	29.557	332.29	24.27	.764	.977
28	+.845	29.515	376.99	24.48	.866	.985
29	+.945	29.471	421.71	24.70	.969	.994
30	+1.045	29.448	466.40	24.81	1.072	.998
31	+1.245	29.440	555.88	24.85	1.277	1.000
32	+1.445	29.433	644.98	24.89	1.482	1.001
33	+1.745	29.440	778.85	24.85	1.789	1.000

FILE: T081384

STATION: 4

Xsta = .800 [m]
Tw = 33.69 [C]
Tinf = 29.25 [C]
Qw = 1.738E+2 [W/m^2]
Yeff = +7.000E-5 [m]
Cond = 13.20

Del-ther = 1.539E-2 [m]
Del-enth = 1.729E-3 [m]
Del-cond = 6.628E-4 [m]
Re-enth = 1.726E+3
Prt = .950
Qadded = 141.40 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.007	0.000	0.00	0.00	0.000	0.000
2	+.009	33.159	4.08	2.62	.006	.122
3	+.011	33.071	4.99	3.05	.007	.142
4	+.013	32.981	5.90	3.88	.008	.181
5	+.015	32.783	6.81	4.48	.010	.209
6	+.017	32.655	7.73	5.11	.011	.238
7	+.019	32.493	8.64	5.91	.012	.275
8	+.021	32.405	9.56	6.35	.014	.296
9	+.026	32.164	11.85	7.55	.017	.351
10	+.031	31.984	14.14	8.44	.020	.392
11	+.036	31.835	16.44	9.16	.023	.427
12	+.041	31.723	18.73	9.74	.027	.452
13	+.051	31.547	23.33	10.61	.033	.493
14	+.061	31.414	27.92	11.28	.040	.523
15	+.071	31.315	32.52	11.77	.046	.546
16	+.091	31.186	41.71	12.52	.059	.580
17	+.111	31.049	50.92	13.10	.072	.607
18	+.131	30.979	60.12	13.45	.085	.623
19	+.161	30.881	73.90	13.94	.105	.648
20	+.211	30.728	96.97	14.71	.137	.681
21	+.261	30.599	120.04	15.35	.170	.710
22	+.361	30.393	166.23	16.39	.235	.758
23	+.461	30.197	212.51	17.36	.300	.803
24	+.561	30.021	258.88	18.26	.365	.843
25	+.711	29.826	328.47	19.24	.462	.888
26	+.861	29.647	398.18	20.14	.560	.928
27	+1.061	29.512	491.06	20.83	.689	.959
28	+1.261	29.413	583.98	21.33	.819	.983
29	+1.411	29.389	653.52	21.45	.917	.988
30	+1.561	29.356	723.13	21.62	1.014	.996
31	+1.711	29.344	792.67	21.68	1.112	.999
32	+1.861	29.340	862.18	21.70	1.209	1.000
33	+2.061	29.335	954.87	21.72	1.339	1.001

FILE: T0913S5

STATION: 5

Xsta	= 1.029 [m]	Del-ther	= 2.025E-2 [m]
Tw	= 33.81 [C]	Del-enth	= 2.110E-3 [m]
Tinf	= 29.06 [C]	Del-cond	= 6.809E-4 [m]
Qw	= 1.734E+2 [W/m^2]	Re-enth	= 2.164E+3
Yeff	= +6.000E-5 [m]	Prt	= .950
Cond	= 14.20	Qadded	= 181.54 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del99S	DT/DTw
1	+.006	0.000	0.00	0.00	0.000	0.000
2	+.008	33.071	3.66	2.68	.004	.121
3	+.010	32.958	4.57	3.25	.005	.146
4	+.012	32.865	5.49	3.71	.006	.167
5	+.014	32.721	6.41	4.43	.007	.199
6	+.016	32.553	7.33	5.27	.008	.237
7	+.018	32.362	8.26	6.23	.009	.280
8	+.020	32.298	9.18	6.54	.010	.294
9	+.023	32.138	10.57	7.35	.011	.330
10	+.028	31.987	12.88	8.11	.014	.364
11	+.033	31.825	15.19	8.92	.016	.400
12	+.038	31.686	17.50	9.62	.019	.431
13	+.043	31.590	19.82	10.16	.021	.455
14	+.053	31.431	24.45	10.91	.026	.489
15	+.063	31.304	29.08	11.55	.031	.517
16	+.083	31.134	38.35	12.41	.041	.555
17	+.103	31.005	47.63	13.06	.051	.584
18	+.133	30.871	61.55	13.74	.066	.614
19	+.183	30.704	84.77	14.58	.090	.652
20	+.233	30.577	108.01	15.23	.115	.682
21	+.283	30.442	131.30	15.91	.140	.710
22	+.333	30.370	154.58	16.28	.164	.728
23	+.433	30.219	201.15	17.04	.214	.760
24	+.533	30.039	247.86	17.98	.263	.801
25	+.683	29.875	317.92	18.80	.337	.836
26	+.883	29.606	411.66	20.15	.436	.897
27	+1.083	29.470	505.31	20.86	.535	.928
28	+1.283	29.348	598.05	21.49	.634	.956
29	+1.483	29.267	692.78	21.90	.732	.974
30	+1.683	29.204	786.47	22.22	.831	.988
31	+1.883	29.184	880.04	22.32	.930	.992
32	+2.083	29.169	973.60	22.40	1.029	.996
33	+2.383	29.154	1113.91	22.48	1.177	.999

34	+2.683	29.147	1254.20	22.51	1.325	1.001
35	+3.183	29.154	1487.87	22.48	1.572	.999

FILENAME: ST0907

Uinf: 16.63 [m/s]
HEAT FLUX TO HEATER: 234.7 [W/m^2]
HEAT LOSS THROUGH BACK WALL OVER DA: .108 [W]
FREESTREAM TEMPERATURE: 28.76 [C]

	Twall [C]	REx	Enth [m]	Qconv [W/m^2]	St
1	37.11	+3.780E+4	+2.582E-6	+1.715E+2	+1.096E-3
2	36.20	+6.316E+4	+3.569E-5	+1.886E+2	+1.351E-3
3	35.38	+8.863E+4	+7.988E-5	+1.933E+2	+1.553E-3
4	34.57	+1.142E+5	+1.251E-4	+1.984E+2	+1.816E-3
5	35.11	+1.394E+5	+1.556E-4	+1.949E+2	+1.633E-3
6	35.77	+1.644E+5	+1.821E-4	+1.909E+2	+1.450E-3
7	36.15	+1.895E+5	+2.078E-4	+1.888E+2	+1.361E-3
8	36.53	+2.145E+5	+2.275E-4	+1.867E+2	+1.280E-3
9	37.14	+2.394E+5	+2.419E-4	+1.830E+2	+1.165E-3
10	37.72	+2.641E+5	+2.632E-4	+1.794E+2	+1.069E-3
11	37.64	+2.893E+5	+2.907E-4	+1.801E+2	+1.083E-3
12	37.71	+3.144E+5	+3.182E-4	+1.798E+2	+1.071E-3
13	37.63	+3.397E+5	+3.485E-4	+1.801E+2	+1.084E-3
14	37.56	+3.649E+5	+3.860E-4	+1.805E+2	+1.096E-3
15	37.16	+3.905E+5	+4.316E-4	+1.829E+2	+1.162E-3
16	36.86	+4.161E+5	+4.805E-4	+1.847E+2	+1.216E-3
17	36.50	+4.417E+5	+5.435E-4	+1.867E+2	+1.286E-3
18	35.92	+4.678E+5	+6.110E-4	+1.903E+2	+1.416E-3
19	35.68	+4.934E+5	+6.748E-4	+1.916E+2	+1.474E-3
20	35.33	+5.192E+5	+7.594E-4	+1.935E+2	+1.567E-3
21	34.83	+5.453E+5	+8.600E-4	+1.965E+2	+1.720E-3
22	34.45	+5.713E+5	+9.442E-4	+1.988E+2	+1.856E-3
23	34.35	+5.969E+5	+1.009E-3	+1.993E+2	+1.895E-3
24	34.26	+6.225E+5	+1.085E-3	+1.997E+2	+1.930E-3
25	34.05	+6.482E+5	+1.191E-3	+2.009E+2	+2.017E-3
26	33.74	+6.743E+5	+1.309E-3	+2.027E+2	+2.159E-3
27	33.53	+7.001E+5	+1.395E-3	+2.040E+2	+2.267E-3
28	33.53	+7.256E+5	+1.415E-3	+2.040E+2	+2.267E-3
29	33.78	+7.505E+5	+1.438E-3	+2.024E+2	+2.136E-3
30	33.77	+7.760E+5	+1.501E-3	+2.026E+2	+2.147E-3
31	33.73	+8.015E+5	+1.589E-3	+2.028E+2	+2.166E-3
32	33.55	+8.274E+5	+1.669E-3	+2.039E+2	+2.259E-3
33	33.59	+8.527E+5	+1.676E-3	+2.037E+2	+2.237E-3
34	33.84	+8.776E+5	+1.708E-3	+2.021E+2	+2.111E-3
35	33.73	+9.033E+5	+1.788E-3	+2.028E+2	+2.167E-3
36	33.68	+9.288E+5	+1.826E-3	+2.030E+2	+2.184E-3
37	33.82	+9.539E+5	+1.834E-3	+2.023E+2	+2.120E-3
38	33.95	+9.790E+5	+1.892E-3	+2.014E+2	+2.059E-3
39	33.78	+1.005E+6	+2.008E-3	+2.024E+2	+2.136E-3

40	33.63	+1.031E+6	+2.092E-3	+2.034E+2	+2.216E-3
41	33.65	+1.056E+6	+2.140E-3	+2.032E+2	+2.203E-3
42	33.67	+1.082E+6	+2.148E-3	+2.032E+2	+2.196E-3
43	33.87	+1.106E+6	+2.165E-3	+2.019E+2	+2.087E-3
44	33.85	+1.132E+6	+2.229E-3	+2.021E+2	+2.109E-3
45	33.82	+1.157E+6	+2.347E-3	+2.022E+2	+2.119E-3
46	33.56	+1.184E+6	+2.444E-3	+2.038E+2	+2.251E-3
47	33.65	+1.209E+6	+2.432E-3	+2.033E+2	+2.204E-3
48	33.84	+1.234E+6	+2.454E-3	+2.021E+2	+2.112E-3
49	33.79	+1.259E+6	+2.528E-3	+2.024E+2	+2.136E-3
50	33.76	+1.285E+6	+2.643E-3	+2.026E+2	+2.150E-3
51	33.56	+1.311E+6	+2.744E-3	+2.038E+2	+2.254E-3
52	33.60	+1.336E+6	+2.735E-3	+2.036E+2	+2.233E-3

**********CROSS-SPAN DATA**********

61	32.80	+1.569E+6	------	+2.081E+2	+2.728E-3
62	33.41	+1.592E+6	------	+2.046E+2	+2.332E-3
63	33.73	+1.616E+6	------	+2.028E+2	+2.163E-3
64	33.86	+1.641E+6	------	+2.020E+2	+2.101E-3
65	41.83	+1.629E+6	------	+1.547E+2	+6.366E-4
66	48.73	+1.622E+6	------	+1.108E+2	+3.015E-4
67	34.19	+1.715E+6	------	+2.001E+2	+1.956E-3
68	34.00	+1.742E+6	------	+2.012E+2	+2.038E-3
69	32.84	+1.773E+6	------	+2.078E+2	+2.698E-3
70	33.20	+1.797E+6	------	+2.058E+2	+2.456E-3

**********CROSS-SPAN DATA**********

71	36.07	+1.807E+6	------	+1.893E+2	+1.380E-3
72	37.07	+1.827E+6	------	+1.834E+2	+1.178E-3
73	36.38	+1.856E+6	------	+1.875E+2	+1.311E-3
74	37.24	+1.877E+6	------	+1.824E+2	+1.148E-3
75	37.17	+1.902E+6	------	+1.828E+2	+1.160E-3
76	37.35	+1.926E+6	------	+1.818E+2	+1.130E-3
77	37.48	+1.951E+6	------	+1.810E+2	+1.108E-3
78	37.27	+1.977E+6	------	+1.822E+2	+1.142E-3
79	37.55	+2.001E+6	------	+1.808E+2	+1.096E-3
80	37.48	+2.026E+6	------	+1.810E+2	+1.106E-3
81	37.44	+2.052E+6	------	+1.812E+2	+1.114E-3
82	37.12	+2.079E+6	------	+1.832E+2	+1.170E-3
83	35.87	+2.112E+6	------	+1.905E+2	+1.427E-3
84	33.80	+2.150E+6	------	+2.024E+2	+2.132E-3
85	34.07	+2.173E+6	------	+2.008E+2	+2.007E-3
86	34.44	+2.196E+6	------	+1.987E+2	+1.858E-3

**********CROSS-SPAN DATA**********

87	33.55	+2.228E+6	------	+2.038E+2	+2.256E-3
88	33.85	+2.251E+6	------	+2.021E+2	+2.109E-3
89	33.99	+2.276E+6	------	+2.013E+2	+2.043E-3
90	34.14	+2.300E+6	------	+2.004E+2	+1.977E-3
91	34.25	+2.325E+6	------	+1.998E+2	+1.933E-3
92	34.47	+2.348E+6	------	+1.986E+2	+1.849E-3

93	34.34	+2.375E+6	------	+1.993E+2	+1.896E-3
94	33.98	+2.403E+6	------	+2.014E+2	+2.050E-3
95	34.31	+2.426E+6	------	+1.995E+2	+1.911E-3
96	34.17	+2.452E+6	------	+2.003E+2	+1.956E-3
97	34.21	+2.477E+6	------	+2.001E+2	+1.950E-3
98	33.99	+2.504E+6	------	+2.013E+2	+2.043E-3
99	34.65	+2.525E+6	------	+1.975E+2	+1.762E-3
100	33.69	+2.558E+6	------	+2.030E+2	+2.187E-3
101	33.79	+2.582E+6	------	+2.024E+2	+2.136E-3
102	33.68	+2.608E+6	------	+2.031E+2	+2.191E-3

**********CROSS-SPAN DATA**********

103	32.98	+2.639E+6	------	+2.071E+2	+2.602E-3
104	33.82	+2.658E+6	------	+2.023E+2	+2.124E-3
105	33.93	+2.683E+6	------	+2.017E+2	+2.072E-3
106	33.95	+2.708E+6	------	+2.015E+2	+2.061E-3
107	34.14	+2.732E+6	------	+2.004E+2	+1.977E-3
108	34.11	+2.758E+6	------	+2.006E+2	+1.990E-3
109	34.10	+2.783E+6	------	+2.007E+2	+1.994E-3
110	34.05	+2.809E+6	------	+2.010E+2	+2.018E-3
111	34.14	+2.834E+6	------	+2.004E+2	+1.977E-3
112	34.09	+2.860E+6	------	+2.007E+2	+2.000E-3
113	34.02	+2.886E+6	------	+2.012E+2	+2.032E-3
114	33.96	+2.912E+6	------	+2.015E+2	+2.057E-3
115	33.87	+2.938E+6	------	+2.020E+2	+2.096E-3
116	33.76	+2.964E+6	------	+2.026E+2	+2.151E-3
117	33.56	+2.991E+6	------	+2.038E+2	+2.253E-3
118	33.28	+3.019E+6	------	+2.053E+2	+2.407E-3

**********CROSS-SPAN DATA**********

119	33.01	+3.047E+6	------	+2.069E+2	+2.580E-3
120	34.18	+3.062E+6	------	+2.002E+2	+1.963E-3
121	34.25	+3.087E+6	------	+1.998E+2	+1.933E-3
122	34.23	+3.112E+6	------	+1.999E+2	+1.940E-3
123	34.13	+3.139E+6	------	+2.005E+2	+1.983E-3
124	34.18	+3.164E+6	------	+2.002E+2	+1.960E-3
125	34.06	+3.190E+6	------	+2.009E+2	+2.011E-3
126	34.00	+3.216E+6	------	+2.012E+2	+2.039E-3
127	33.71	+3.244E+6	------	+2.029E+2	+2.175E-3
128	33.51	+3.272E+6	------	+2.040E+2	+2.279E-3

**********CROSS-SPAN DATA**********

129	32.78	+3.304E+6	------	+2.082E+2	+2.741E-3
130	34.13	+3.317E+6	------	+2.005E+2	+1.983E-3
131	34.60	+3.338E+6	------	+1.978E+2	+1.798E-3
132	34.38	+3.365E+6	------	+1.991E+2	+1.883E-3
133	34.06	+3.394E+6	------	+2.009E+2	+2.011E-3
134	29.70	+3.504E+6	------	+2.468E+2	-4.226E-3
135	29.93	+3.486E+6	------	+2.240E+2	+1.033E-2
136	34.11	+3.469E+6	------	+2.006E+2	+1.990E-3
137	33.98	+3.496E+6	------	+2.015E+2	+2.057E-3
138	33.96	+3.522E+6	------	+2.015E+2	+2.057E-3

TRANSITIONAL FLOW : **Station 2**
RAW DATA--FILE NAME: IUV091552

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	8.679	-.240	1.564	.540	-.121	.080
2	.088	9.439	-.357	1.636	.536	-.118	.083
3	.063	10.670	-.445	1.673	.549	-.142	.079
4	.113	12.494	-.485	1.696	.531	-.214	.077
5	.143	13.909	-.561	1.555	.468	-.083	.081
6	.173	14.854	-.568	1.354	.452	-.076	.050
7	.203	15.559	-.528	1.005	.384	-.052	.041
8	.233	15.849	-.530	.894	.334	-.050	.036
9	.263	16.068	-.498	.748	.314	-.080	.039
10	.293	16.228	-.502	.525	.247	-.022	.027
11	.323	16.279	-.483	.510	.250	-.051	.026
12	.353	16.352	-.484	.408	.220	-.032	.018
13	.403	16.386	-.474	.265	.182	-.005	.009
14	.453	16.426	-.465	.198	.194	-.008	.010
15	.503	16.427	-.461	.204	.203	-.015	.005
16	.583	16.440	-.483	.148	.198	-.002	.021

Upw [m/s]= 16.29 DEL995 [cm]= .318 Cf= 1.700E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV091552

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.18898	.53280	.09601	.03317	.53818
2	.21417	.57941	.10041	.03292	.52443
3	.28142	.65502	.10272	.03370	.62827
4	.35591	.76697	.10414	.03282	.94820
5	.45038	.85383	.09545	.02871	.38639
6	.54488	.91167	.08314	.02775	.33902
7	.63937	.95515	.06169	.02357	.40797
8	.73386	.97294	.05486	.02053	.22238
9	.82835	.98635	.04595	.01925	.35545
10	.92283	.99622	.03222	.01519	.09930
11	1.01732	.99833	.03129	.01533	.22403
12	1.11181	1.00379	.02504	.01353	.14120
13	1.28529	1.00582	.01628	.01118	.02336
14	1.43677	1.00836	.01218	.01191	.03502
15	1.58425	1.00939	.01251	.01246	.06564
16	1.83622	1.00821	.00906	.01215	.02817

LAMINAR FLOW : **Station 3A**
RAW DATA--FILE NAME: IUV0915S3A

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	5.117	0.000	1.200	.295	-.058	.476
2	.085	6.303	0.000	1.372	.304	-.106	.468
3	.125	8.035	0.000	1.483	.354	-.142	.478
4	.225	10.566	0.000	1.194	.282	-.039	.406
5	.325	11.603	0.000	.742	.205	-.022	.361
6	.425	11.902	0.000	.491	.184	-.009	.316
7	.525	12.034	0.000	.308	.180	-.004	.223
8	.625	12.068	0.000	.225	.183	-.003	.186
9	.725	12.104	0.000	.164	.184	-.003	.122
10	.825	12.133	0.000	.163	.181	-.005	.081
11	.925	12.132	0.000	.136	.189	-.004	.036
12	1.075	12.136	0.000	.127	.202	-.003	.015
13	1.225	12.137	0.000	.130	.209	-.003	.005
14	1.375	12.134	0.000	.120	.215	-.002	.003
15	1.525	12.149	0.000	.120	.216	-.002	.001

Upw [m/s]= 12.29 DEL995 [cm]= .873 Cf= 1.695E-3

LAMINAR FLOW :
REDUCED DATA--FILE NAME: IUV0915S3A

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.06876	.41634	.09765	.02398	.45435
2	.09741	.51288	.11160	.02471	.62797
3	.14325	.65378	.12064	.02879	1.10871
4	.25785	.85970	.09715	.02294	.30723
5	.37245	.94413	.06036	.01670	.17522
6	.48705	.98839	.03997	.01501	.07192
7	.60165	.97915	.02503	.01467	.03033
8	.71625	.98196	.01828	.01490	.02126
9	.83085	.98485	.01500	.01498	.02268
10	.94545	.98720	.01324	.01469	.03605
11	1.06005	.98714	.01107	.01542	.03341
12	1.23195	.98748	.01031	.01645	.02083
13	1.40385	.98759	.01060	.01698	.02333
14	1.57575	.98733	.00976	.01750	.01812
15	1.74765	.98855	.00974	.01758	.01854

TURBULENT FLOW : **Station 3A**
RAW DATA--FILE NAME: IUV091593A

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	6.942	-.150	1.469	.885	-.328	.476
2	.085	7.711	-.267	1.519	.916	-.382	.466
3	.125	8.483	-.384	1.466	.868	-.429	.478
4	.225	9.600	-.410	1.403	.849	-.467	.406
5	.325	10.349	-.448	1.228	.815	-.383	.361
6	.425	10.911	-.542	1.031	.674	-.181	.316
7	.525	11.023	-.384	1.060	.765	-.307	.223
8	.625	11.306	-.457	.961	.665	-.213	.186
9	.725	11.445	-.403	.830	.579	-.140	.122
10	.825	11.636	-.393	.798	.659	-.161	.091
11	.925	11.587	-.294	.786	.659	-.242	.036
12	1.075	12.014	-.387	.429	.557	-.016	.015
13	1.225	11.842	.230	.750	.480	-.189	.005
14	1.375	11.759	-.118	.383	.382	-.134	.003
15	1.525	0.000	0.000	0.000	0.000	0.000	.001

Upw [m/s]= 12.29 DEL995 [cm]= .873 Cf= 4.100E-3

TURBULENT FLOW :
REDUCED DATA--FILE NAME: IUV091593A

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.06876	.56488	.11951	.07199	1.06009
2	.09741	.62743	.12359	.07455	1.23333
3	.14325	.69025	.11929	.07063	1.57810
4	.25785	.78112	.11420	.06905	1.50788
5	.37245	.84210	.09994	.06632	1.23769
6	.48705	.88779	.08387	.05487	.58425
7	.60165	.89693	.08622	.06221	.99125
8	.71625	.91992	.07818	.05412	.68733
9	.83085	.93125	.06754	.04711	.45069
10	.94545	.94695	.06497	.05360	.51979
11	1.06005	.94280	.06393	.05361	.78011
12	1.23195	.97757	.03488	.04531	.05289
13	1.40385	.96357	.06102	.03903	.80995
14	1.57575	.95676	.03119	.03110	.43227
15	1.74765	0.00000	0.00000	0.00000	0.00000

TRANSITIONAL FLOW : **Station 3A**
RAW DATA--FILE NAME: IUV0915S3A

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.050	5.987	-.174	1.616	.647	-.164	.475
2	.075	6.959	-.347	1.604	.666	-.191	.455
3	.125	8.249	-.463	1.491	.658	-.292	.470
4	.225	10.174	-.544	1.368	.595	-.270	.405
5	.325	11.151	-.549	1.122	.523	-.203	.361
6	.425	11.589	-.574	.844	.409	-.074	.318
7	.525	11.809	-.531	.707	.403	-.107	.223
8	.625	11.926	-.532	.549	.333	-.053	.188
9	.725	12.023	-.523	.400	.270	-.030	.122
10	.825	12.093	-.510	.306	.257	-.022	.081
11	.925	12.112	-.509	.224	.228	-.017	.035
12	1.075	12.134	-.498	.136	.212	-.003	.015
13	1.225	12.136	-.487	.141	.218	-.005	.005
14	1.375	12.133	-.485	.122	.216	-.003	.003
15	1.525	12.149	-.485	.120	.216	-.002	.001

Upw [m/s]= 12.29 DEL995 [cm]= .873 Cf= 2.600E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV0915S3A

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.06876	.48712	.13152	.05266	.83345
2	.08741	.56626	.13050	.05421	.97530
3	.14325	.67123	.12134	.05339	1.48607
4	.25785	.82760	.11129	.04641	1.37530
5	.37245	.90730	.09128	.04256	1.03143
6	.48705	.94295	.06866	.03327	.37850
7	.60165	.96066	.05752	.03279	.54809
8	.71625	.97039	.04484	.02712	.27199
9	.83085	.97831	.03256	.02197	.15274
10	.94545	.98398	.02488	.02092	.11406
11	1.06005	.98554	.01821	.01857	.09796
12	1.23195	.98733	.01110	.01723	.01550
13	1.40385	.98747	.01147	.01771	.02530
14	1.57575	.98725	.00897	.01761	.01375
15	1.74765	.98853	.00878	.01759	.01127

LAMINAR FLOW : **Station3**
RAW DATA--FILE NAME: IUV091553

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	7.420	0.000	1.420	.426	.092	.838
2	.095	10.338	0.000	1.849	.452	-.227	.820
3	.145	12.882	0.000	1.776	.403	-.113	.812
4	.245	15.262	0.000	1.041	.314	-.039	.784
5	.345	15.906	0.000	.655	.242	-.029	.732
6	.445	16.122	0.000	.380	.242	-.008	.646
7	.545	16.188	0.000	.298	.255	.005	.510
8	.645	16.209	0.000	.220	.253	0.000	.371
9	.745	16.236	0.000	.208	.289	-0.000	.244
10	.845	16.251	0.000	.198	.270	-.002	.141
11	.945	16.270	0.000	.181	.276	-.005	.054
12	1.095	16.255	0.000	.172	.272	-.003	.028
13	1.245	16.256	0.000	.164	.254	-.002	.009
14	1.395	16.262	0.000	.168	.314	-.002	.004
15	1.545	16.262	0.000	.156	.310	-.003	.001

Upw [m/s]= 16.18 DEL995 [cm]= .891 Cf= 1.757E-3

LAMINAR FLOW :
REDUCED DATA--FILE NAME: IUV091553

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.06732	.45858	.08778	.02635	-.40198
2	.10659	.63892	.11426	.02791	.98741
3	.16268	.79816	.10978	.02493	.49304
4	.27498	.94329	.06437	.01938	.15540
5	.38708	.98304	.04046	.01497	.12630
6	.49917	.99639	.02352	.01495	.02570
7	.61147	.99804	.01840	.01572	-.02158
8	.72356	1.00180	.01363	.01566	-.00084
9	.83596	1.00347	.01272	.01683	.00075
10	.94805	1.00437	.01221	.01667	.00746
11	1.06025	1.00553	.01117	.01704	.02307
12	1.22854	1.00463	.01063	.01684	.01291
13	1.39684	1.00468	.01011	.01818	.01055
14	1.56513	1.00505	.01025	.01943	.01011
15	1.73342	1.00510	.00963	.01817	.00797

TURBULENT FLOW : **Station3**
RAW DATA--FILE NAME: IUV091553

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	9.316	.413	1.519	1.226	-.356	.838
2	.095	11.122	-.402	1.627	1.137	-.684	.820
3	.145	12.139	-.503	1.580	1.042	-.708	.812
4	.245	13.347	-.567	1.529	.930	-.505	.784
5	.345	14.254	-.607	1.418	.854	-.444	.732
6	.445	14.845	-.638	1.238	.773	-.305	.648
7	.545	15.260	-.631	1.081	.720	-.268	.510
8	.645	15.440	-.589	.966	.682	-.226	.371
9	.745	15.685	-.538	.833	.635	-.168	.244
10	.845	15.712	-.484	.804	.678	-.209	.141
11	.945	15.675	-.428	.625	.592	-.106	.084
12	1.095	15.875	-.259	.595	.566	-.084	.028
13	1.245	16.022	-.272	.476	.393	-.070	.009
14	1.395	16.195	-.155	.229	.305	-.019	.004
15	1.545	15.868	.040	.222	.115	.025	.001

Upw [m/s]= 16.18 DEL995 [cm]= .891 Cf= 4.500E-3

TURBULENT FLOW :
REDUCED DATA--FILE NAME: IUV091553

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.06732	.57590	.09399	.07580	.60391
2	.10659	.68739	.10057	.07028	1.18150
3	.16288	.75023	.09763	.06440	1.20144
4	.27488	.82493	.09451	.05750	.86393
5	.38708	.88098	.09766	.05280	.75352
6	.49927	.91748	.07653	.04776	.51766
7	.61147	.94437	.06684	.04452	.45425
8	.72366	.95426	.06094	.04212	.36293
9	.83586	.97001	.05146	.03924	.28499
10	.94805	.97107	.04971	.04192	.35522
11	1.06025	.98118	.03864	.03661	.18002
12	1.22854	.98116	.03675	.03621	.14248
13	1.39684	.99021	.02940	.02431	.11907
14	1.56513	1.00095	.01415	.01887	.03146
15	1.73342	.98075	.01372	.00709	-.04323

TRANSITIONAL FLOW : **Station3**
RAW DATA--FILE NAME: IUV091593

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.050	9.009	.365	1.658	1.142	-.200	.838
2	.095	10.960	-.436	1.696	1.050	-.578	.820
3	.145	12.278	-.544	1.644	.960	-.623	.812
4	.245	13.760	-.607	1.639	.841	-.472	.784
5	.345	14.697	-.641	1.457	.744	-.376	.732
6	.445	15.294	-.668	1.190	.640	-.225	.648
7	.545	15.714	-.660	.915	.545	-.148	.510
8	.645	15.923	-.654	.728	.464	-.104	.371
9	.745	16.104	-.655	.505	.398	-.058	.244
10	.845	16.175	-.634	.398	.362	-.043	.141
11	.945	16.237	-.622	.273	.321	-.021	.084
12	1.095	16.244	-.616	.205	.293	-.009	.038
13	1.245	16.254	-.605	.170	.297	-.004	.025
14	1.395	16.261	-.600	.166	.316	-.003	.004
15	1.545	16.262	-.590	.156	.311	-.002	.001

Upw [m/s]= 16.16 DEL995 [cm]= .891 Cf= 4.000E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV091593

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.05732	.55681	.10246	.07057	.38282
2	.10659	.67864	.10481	.06489	1.10300
3	.16268	.75887	.10160	.05931	1.19217
4	.27488	.85043	.10133	.05197	.90214
5	.38708	.90834	.09003	.04598	.71603
6	.49927	.94525	.07355	.03953	.42939
7	.61147	.97123	.05655	.03371	.28289
8	.72386	.96414	.04498	.02871	.19850
9	.83585	.99529	.03124	.02459	.11044
10	.94805	.99969	.02458	.02240	.09232
11	1.06025	1.00350	.01695	.01982	.03529
12	1.22854	1.00398	.01269	.01809	.01757
13	1.39684	1.00455	.01051	.01835	.00718
14	1.56513	1.00504	.01026	.01951	.00479
15	1.73342	1.00527	.00586	.01921	.00398

LAMINAR FLOW : **Station 4**
RAW DATA--FILE NAME: 1UV091594

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.050	7.638	0.000	.824	.536	.184	.998
2	.095	9.874	0.000	1.973	.557	-.267	.996
3	.145	13.126	0.000	1.365	.267	-.262	.994
4	.245	14.975	0.000	1.278	.425	-.243	.991
5	.345	15.810	0.000	.959	.387	-.159	.981
6	.445	16.000	0.000	.651	.357	.111	.976
7	.545	16.132	0.000	.496	.315	.048	.942
8	.645	16.172	0.000	.356	.321	.033	.852
9	.745	16.237	0.000	.323	.276	.001	.748
10	.845	16.258	0.000	.315	.252	.001	.633
11	.945	16.288	0.000	.283	.283	.002	.505
12	1.045	16.301	0.000	.244	.270	0.000	.366
13	1.145	16.292	0.000	.228	.279	0.000	.278
14	1.245	16.330	0.000	.219	.277	-.005	.175
15	1.345	16.313	0.000	.199	.276	-.006	.116
16	1.545	16.340	0.000	.183	.280	-.003	.052
17	1.745	16.348	0.000	.166	.289	-.003	.021
18	1.945	16.334	0.000	.162	.296	-.001	.011
19	2.145	16.331	0.000	.154	.312	-.001	.003

Upw [m/s]= 16.38 DEL995 [cm]= 1.335 Cf= 2.200E-3

LAMINAR FLOW :
REDUCED DATA--FILE NAME: 1UV091554

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Uteu^2
1	.04481	.46632	.05038	.03269	-.62447
2	.07095	.60279	.12045	.03400	.90558
3	.10929	.80133	.08333	.01632	.89688
4	.18297	.91425	.07804	.02584	.82485
5	.25765	.96522	.05857	.02365	.53954
6	.33234	.97683	.03974	.02177	-.37455
7	.40701	.98485	.03031	.01920	-.15610
8	.48170	.98732	.02175	.01960	-.11342
9	.55639	.99105	.01973	.01883	-.00473
10	.63107	.99158	.01924	.01782	-.00172
11	.70575	.99436	.01607	.01727	-.00642
12	.78043	.99520	.01493	.01651	-.00110
13	.85512	.99464	.01391	.01704	-.00101
14	.92980	.99699	.01338	.01690	.00044
15	1.00448	.99893	.01213	.01700	.01935
16	1.15385	.99756	.01116	.01707	.00957
17	1.30321	.99793	.01014	.01767	.01119
18	1.45258	.99722	.00908	.01810	.00355
19	1.60194	.99700	.00939	.01924	.00338

TURBULENT FLOW : **Station 4**
RAW DATA--FILE NAME: IUV091554

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	8.573	.863	1.195	1.156	-.094	.955
2	.095	10.375	-.356	1.398	1.134	-.631	.995
3	.145	11.589	-.515	1.344	.953	-.539	.994
4	.245	12.730	-.638	1.336	.885	-.555	.991
5	.345	13.416	-.645	1.294	.852	-.503	.991
6	.445	14.042	-.700	1.276	.778	-.450	.979
7	.545	14.563	-.727	1.179	.735	-.377	.942
8	.645	14.899	-.765	1.102	.704	-.305	.857
9	.745	15.139	-.733	1.033	.682	-.290	.748
10	.845	15.359	-.710	.920	.604	-.205	.633
11	.945	15.510	-.696	.819	.597	-.198	.505
12	1.045	15.575	-.672	.808	.569	-.164	.366
13	1.145	15.668	-.604	.779	.584	-.174	.276
14	1.245	15.787	-.576	.718	.520	-.152	.175
15	1.345	15.798	-.565	.668	.564	-.124	.116
16	1.545	15.895	-.510	.697	.538	-.175	.052
17	1.745	16.084	-.437	.485	.470	-.034	.021
18	1.945	15.963	-.321	.681	.454	-.060	.011
19	2.145	16.200	-.518	.355	.483	.098	.003

Upw [m/s]= 16.38 DEL995 [cm]= 1.339 Cf= 4.250E-3

TURBULENT FLOW :
REDUCED DATA--FILE NAME: IUV091554

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.04481	.52338	.07298	.07060	.18460
2	.07095	.63340	.08536	.06923	1.10741
3	.10829	.70751	.08207	.05816	.94517
4	.16297	.77720	.08194	.05402	.97471
5	.25785	.81919	.07897	.05204	.88303
6	.33234	.85727	.07792	.04750	.78574
7	.40702	.88908	.07198	.04485	.56083
8	.48170	.90960	.06730	.04300	.53903
9	.55639	.92428	.06307	.04165	.50906
10	.63107	.93766	.05614	.03689	.35684
11	.70575	.94666	.04997	.03547	.34667
12	.78043	.95063	.04936	.03473	.28836
13	.85512	.95854	.04757	.03568	.30518
14	.92980	.96360	.04394	.03175	.26881
15	1.00448	.96447	.04066	.03446	.21670
16	1.15385	.97042	.04257	.03287	.30699
17	1.30321	.98192	.02840	.02869	.09547
18	1.45256	.97577	.04159	.02771	.10551
19	1.60194	.98804	.02165	.02943	-.17136

TRANSITIONAL FLOW : **Station 4**
RAW DATA--FILE NAME: IUV081554

N	Y [cm]	U [m/s]	V [m/s]	u' [m/s]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	8.559	.881	1.196	1.155	-.091	.555
2	.095	10.373	-.355	1.401	1.132	-.630	.995
3	.145	11.598	-.517	1.349	.980	-.540	.964
4	.245	12.751	-.639	1.352	.882	-.556	.981
5	.345	13.440	-.646	1.310	.850	-.504	.981
6	.445	14.084	-.704	1.297	.772	-.448	.979
7	.545	14.655	-.737	1.208	.718	-.369	.942
8	.645	15.087	-.790	1.122	.665	-.284	.853
9	.745	15.418	-.760	1.025	.611	-.257	.748
10	.845	15.689	-.777	.872	.521	-.171	.633
11	.945	15.895	-.787	.724	.475	-.138	.509
12	1.045	16.035	-.794	.632	.418	-.095	.388
13	1.145	16.119	-.788	.533	.408	-.083	.278
14	1.245	16.235	-.796	.416	.350	-.054	.175
15	1.345	16.294	-.801	.337	.338	-.035	.116
16	1.545	16.317	-.783	.257	.306	-.018	.052
17	1.745	16.341	-.803	.161	.300	-.009	.021
18	1.945	16.331	-.792	.178	.303	-.004	.011
19	2.145	16.330	-.803	.155	.313	-.001	.003

Upw [m/s]= 16.38 DEL995 [cm]= 1.339 Cf= 4.200E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV081554

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.04481	.52312	.07301	.07050	.18086
2	.07095	.63326	.08553	.08911	1.11775
3	.10829	.70807	.08238	.05802	.95913
4	.18297	.77843	.08251	.05384	.98710
5	.25765	.82051	.08000	.05186	.89279
6	.33234	.85984	.07921	.04712	.79113
7	.40702	.89468	.07374	.04385	.85413
8	.48170	.92107	.06849	.04059	.50435
9	.55639	.94131	.06257	.03732	.45829
10	.63107	.95779	.05302	.03181	.33097
11	.70575	.97038	.04419	.02926	.24444
12	.78043	.97884	.03861	.02553	.18902
13	.85512	.98407	.03253	.02439	.14661
14	.92980	.99115	.02507	.02138	.09553
15	1.00448	.99228	.02087	.02081	.06150
16	1.15385	.99816	.01570	.01859	.03232
17	1.30321	.99781	.01105	.01629	.01073
18	1.45259	.99699	.01059	.01649	.00825
19	1.62194	.99899	.00945	.01810	.00183

TRANSITIONAL FLOW : **Station 5**
RAW DATA--FILE NAME: IUV0515S5

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/S2]	Gamma
1	.060	9.875	.071	1.333	1.108	-.449	1.000
2	.080	10.902	-.264	1.378	1.075	-.585	1.000
3	.105	11.474	-.347	1.344	.979	-.585	1.000
4	.155	12.137	-.465	1.298	.875	-.525	1.000
5	.255	12.983	-.548	1.248	.841	-.509	1.000
6	.355	13.726	-.631	1.234	.818	-.508	.995
7	.505	14.385	-.606	1.162	.754	-.402	.998
8	.655	15.032	-.690	1.152	.658	-.365	.984
9	.805	15.574	-.708	1.060	.622	-.286	.879
10	.955	15.964	-.733	.929	.565	-.222	.739
11	1.105	16.283	-.743	.787	.486	-.143	.572
12	1.255	16.514	-.778	.622	.428	-.096	.399
13	1.405	16.644	-.757	.546	.403	-.096	.276
14	1.555	16.733	-.770	.486	.342	-.050	.191
15	1.705	16.794	-.765	.376	.329	-.044	.133
16	1.855	16.815	-.772	.296	.313	-.029	.088
17	2.055	16.853	-.788	.224	.311	-.013	.043
18	2.255	16.849	-.799	.206	.317	-.009	.022
19	2.555	16.841	-.816	.177	.316	-.005	.011

Upw [m/s]= 16.81 DEL995 [cm]= 1.749 Cf= 4.050E-3

TRANSITIONAL FLOW :
REDUCED DATA--FILE NAME: IUV0515S5

N	Y/DELTA	U/Upw	u'/Upw	v'/Upw	u'v'/Utau^2
1	.03431	.58748	.07927	.06593	.78540
2	.04574	.64855	.08196	.06393	1.02321
3	.06003	.68256	.07998	.05826	.96730
4	.08862	.72202	.07724	.05235	.91689
5	.14580	.77235	.07413	.05004	.88949
6	.20297	.81651	.07339	.04887	.88826
7	.28874	.85574	.06915	.04484	.70176
8	.37450	.89421	.06852	.04155	.63773
9	.46026	.92646	.06305	.03703	.50084
10	.54603	.94985	.05527	.03360	.38717
11	.63179	.96863	.04679	.02891	.24955
12	.71755	.98239	.03697	.02549	.16857
13	.80332	.99012	.03248	.02395	.16792
14	.88908	.99543	.02771	.02036	.09899
15	.97484	.99902	.02236	.01959	.07747
16	1.06061	1.00032	.01759	.01662	.05057
17	1.17496	1.00056	.01332	.01853	.02262
18	1.28931	1.00034	.01227	.01684	.01571
19	1.46083	1.00182	.01052	.01878	.00921

IVT011952 (Station 2, Transitional flow)

Del 99.5 = .318 [cm] Tw-Tinf = 6.560 [C] Upw = 16.86 [m/S]
Qwall = 137.3 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	8.91	+.04	33.84	1.551	.372	.648	+.100	-.824
2	.070	9.03	-.63	33.17	1.819	.428	.648	-.242	-1.026
3	.090	10.93	-.70	32.48	1.934	.462	.636	-.243	-1.103
4	.120	12.97	-.77	31.69	1.940	.473	.608	-.297	-1.068
5	.150	14.50	-.83	31.18	1.720	.392	.505	-.126	-.768
6	.180	15.49	-.80	30.82	1.616	.360	.487	-.164	-.703
7	.210	16.09	-.82	30.60	1.266	.451	.356	-.167	-.394
8	.240	16.54	-.78	30.44	1.002	.321	.291	-.099	-.256
9	.270	16.75	-.79	30.35	.819	.299	.231	-.066	-.166
10	.300	16.87	-.79	30.27	.697	.217	.200	-.034	-.111
11	.330	16.96	-.74	30.21	.589	.252	.171	-.068	-.079
12	.380	17.04	-.73	30.16	.449	.273	.106	-.052	-.030
13	.460	17.05	-.74	30.16	.328	.219	.077	-.031	-.015

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.022	+.181	-.0220	105.482	-37.033	-1.581	.096
2	+.135	+.083	+.0375	91.218	-32.123	+.630	.091
3	+.128	-.081	+.0438	77.959	-27.556	+.680	.098
4	+.141	-.471	+.1641	59.857	-21.351	+.753	.081
5	+.068	-.268	+.0922	44.217	-15.819	+.668	.075
6	+.078	-.382	+.1368	30.741	-11.260	+.790	.076
7	+.055	+.585	+.0682	19.527	-7.374	+1.140	.063
8	+.045	-.288	+.1103	10.576	-4.261	+.891	.046
9	+.024	-.381	+.0923	3.888	-1.921	+1.378	.045
10	+.017	-.095	+.0285	-.538	-.355	-1.330	.046
11	+.017	-.226	+.0205	-2.700	.439	+.646	.040
12	+.007	-.436	+.0035	-1.276	.043	+.313	.024
13	+.007	-.095	+.0108	14.076	-5.057	+1.601	.015

FILE NAME : (Station 2, Transitional flow)

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U = SUM(A(N) * Y^N)

A0= +8.4597E-01 A1= +1.4554E+02 A2= -4.3204E+02 A3= +4.1904E+02

Y	U	UC	% DIFF
.0500	6.9140	7.095	+2.624
.0700	9.0332	9.061	+.305
.0900	10.9310	10.751	-1.648
.1200	12.9682	12.814	-1.180
.1500	14.4951	14.371	-.857
.1800	15.4858	15.490	+.025
.2100	16.0932	16.238	+.899
.2400	16.5449	16.684	+.840
.2700	16.7544	16.895	+.840
.3000	16.8721	16.940	+.401
.3300	16.9633	16.885	-.459
.3800	17.0447	16.760	-1.671
.4600	17.0482	17.165	+.683

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T = SUM(A(N) * Y^N)

A0= +3.5991E+01 A1= -5.0811E+01 A2= +1.4852E+02 A3= -1.4317E+02

Y	T	TC	% DIFF
.0500	33.8449	33.804	-.120
.0700	33.1706	33.113	-.173
.0900	32.4605	32.517	+.174
.1200	31.6906	31.785	+.298
.1500	31.1774	31.228	+.163
.1800	30.8204	30.823	+.007
.2100	30.5958	30.545	-.166
.2400	30.4432	30.372	-.233
.2700	30.3539	30.282	-.238
.3000	30.2657	30.249	-.054
.3300	30.2117	30.253	+.135
.3800	30.1646	30.274	+.361
.4600	30.1558	30.110	-.153

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IVT011982 (Station 2, Laminar flow)

Del 99.5 = .318 [cm] Tw-Tinf = 6.560 [C] Upw = 16.86 [m/S]
Qwall = 137.3 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	6.71	+.01	33.90	1.299	.217	.527	+.058	-.627
2	.070	8.93	-.65	33.19	1.689	.243	.575	-.187	-.924
3	.090	10.90	-.74	32.45	1.865	.256	.586	-.184	-1.041
4	.120	13.01	-.81	31.66	1.897	.272	.570	-.189	-1.028
5	.150	14.56	-.85	31.14	1.656	.247	.457	-.066	-.717
6	.180	15.61	-.82	30.77	1.455	.231	.399	-.068	-.548
7	.210	16.19	-.83	30.56	1.149	.342	.301	-.113	-.312
8	.240	16.62	-.79	30.42	.891	.209	.236	-.042	-.194
9	.270	16.81	-.80	30.33	.701	.145	.180	-.021	-.113
10	.300	16.93	-.79	30.24	.525	.138	.127	-.015	-.056
11	.330	17.02	-.75	30.19	.413	.134	.111	-.018	-.037
12	.380	17.07	-.74	30.16	.340	.139	.072	-.010	-.018
13	.460	17.07	-.75	30.15	.196	.155	.046	-.006	-.004

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.011	+.017	+.0180	109.646	-38.419	-1.917	.096
2	+.091	-.018	+.0111	94.815	-33.248	+.723	.091
3	+.086	-.032	+.0128	80.852	-28.442	+.753	.098
4	+.089	-.119	+.0505	61.909	-21.919	+.757	.081
5	+.042	-.110	+.0263	45.369	-16.218	+.566	.075
6	+.036	-.105	+.0274	31.231	-11.340	+.684	.076
7	+.026	+.844	-.0037	19.496	-7.264	+1.617	.063
8	+.022	-.123	+.0576	10.163	-4.051	+.746	.046
9	+.011	-.034	+.0095	3.232	-1.639	+.991	.045
10	+.007	-.025	+.0088	-1.295	-.050	-.079	.046
11	+.008	-.015	+.0057	-3.420	.716	+.494	.040
12	+.003	-.011	+.0024	-1.623	.166	+.316	.024
13	+.002	-.006	+.0026	15.133	-5.465	+.977	.019

FILE NAME : IVT011952 **Station 2 (Laminar)**

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U = SUM(A(N) * Y^N)

A0= +3.8545E-01 A1= +1.5210E+02 A2= -4.5586E+02 A3= +4.4491E+02

Y	U	UC	% DIFF
.0500	6.7060	6.906	+2.986
.0700	8.9262	8.951	+.278
.0900	10.9008	10.706	-1.787
.1200	13.0109	12.841	-1.303
.1500	14.5831	14.444	-.814
.1800	15.6068	15.587	-.124
.2100	16.1855	16.342	+.959
.2400	16.6178	16.781	+.963
.2700	16.8125	16.976	+.973
.3000	16.9348	16.999	+.380
.3300	17.0160	16.922	-.550
.3800	17.0721	16.769	-1.778
.4600	17.0691	17.195	+.738

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T = SUM(A(N) * Y^N)

A0= +3.8123E+01 A1= -5.2946E+01 A2= +1.5669E+02 A3= -1.5229E+02

Y	T	TC	% DIFF
.0500	33.8995	33.848	-.151
.0700	33.1860	33.132	-.162
.0900	32.4550	32.516	+.188
.1200	31.6564	31.763	+.336
.1500	31.1440	31.193	+.156
.1800	30.7711	30.781	+.033
.2100	30.5649	30.504	-.199
.2400	30.4166	30.336	-.265
.2700	30.3336	30.253	-.267
.3000	30.2431	30.230	-.045
.3300	30.1936	30.242	+.159
.3800	30.1567	30.273	+.386
.4600	30.1506	30.100	-.167

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IVT011952 **Station 2 (Turbulent)**

Del 99.5 = .318 [cm] Tw-Tinf = 6.560 [C] Upw = 16.86 [m/S]
Qwall = 137.3 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	8.88	+.28	33.33	2.222	.965	1.216	-.066	-1.566
2	.070	10.10	-.46	33.02	2.578	1.182	1.134	-1.019	-1.876
3	.090	11.21	-.33	32.51	2.466	1.183	.979	-.916	-1.692
4	.120	12.48	-.34	32.08	2.333	1.305	.849	-1.267	-1.318
5	.150	13.66	-.58	31.59	2.205	1.105	.809	-.825	-1.011
6	.180	14.00	-.49	31.42	2.516	.979	.901	-.825	-1.647
7	.210	14.72	-.65	31.05	1.952	1.207	.670	-.695	-.938
8	.240	15.03	-.37	30.99	1.732	1.072	.611	-.607	-.716
9	.270	15.52	-.63	30.78	1.714	1.238	.561	-.809	-.751
10	.300	15.57	-.70	30.74	1.757	.782	.557	-.311	-.614
11	.330	15.68	-.42	30.65	1.717	1.032	.489	-.848	-.527
12	.360	15.95	-.44	30.48	1.562	1.488	.394	-1.815	-.175
13	.460	15.97	-.32	30.43	1.606	1.053	.365	-.851	-.326

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.285	-.067	-.0539	61.256	-22.566	+.085	.096
2	+.615	-.293	+.3155	53.979	-20.094	+.616	.081
3	+.477	-.357	-.0828	47.173	-17.776	+.724	.088
4	+.537	-2.572	+.3218	37.848	-14.587	+.924	.061
5	+.272	-1.167	+.2831	29.578	-11.744	+.913	.075
6	+.356	-1.538	+.6880	22.369	-9.246	+.957	.076
7	+.399	-1.512	+.3724	16.219	-7.093	+.761	.083
8	+.265	-1.298	+.2864	11.127	-5.286	+1.089	.046
9	+.224	-5.210	+1.1360	7.095	-3.825	+1.945	.045
10	+.172	-.723	+.1577	4.121	-2.709	+1.190	.046
11	+.093	-3.361	-.1883	2.206	-1.938	+7.953	.042
12	+.040	-14.097	-.6976	1.367	-1.422	+47.747	.024
13	+.129	-2.848	-.0144	6.142	-2.592	+2.793	.015

FILE NAME : Station 2 (Turbulent)

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U = SUM(A(N) * Y^N)

A0= +5.4189E+00 A1= +8.1506E+01 A2= -2.1721E+02 A3= +1.9608E+02

Y	U	UC	% DIFF
.0500	8.8841	8.974	+1.009
.0700	10.1021	10.125	+.229
.0900	11.2088	11.136	-.649
.1200	12.4814	12.409	-.583
.1500	13.6564	13.417	-1.750
.1800	14.0043	14.194	+1.354
.2100	14.7216	14.770	+.329
.2400	15.0323	15.178	+.967
.2700	15.5208	15.448	-.467
.3000	15.5709	15.614	+.277
.3300	15.8813	15.706	+.159
.3800	15.9529	15.783	-1.064
.4600	15.9709	16.033	+.391

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T = SUM(A(N) * Y^N)

A0= +3.4653E+01 A1= -2.9417E+01 A2= +7.3305E+01 A3= -6.3983E+01

Y	T	TC	% DIFF
.0500	33.3284	33.358	+.088
.0700	33.0158	32.931	-.256
.0900	32.5111	32.553	+.129
.1200	32.0820	32.068	-.042
.1500	31.5885	31.674	+.272
.1800	31.4237	31.360	-.202
.2100	31.0548	31.116	+.197
.2400	30.9939	30.931	-.202
.2700	30.7809	30.795	+.047
.3000	30.7352	30.698	-.120
.3300	30.6517	30.629	-.072
.3800	30.4792	30.549	+.230
.4600	30.4253	30.405	-.066

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IVT011953 **Station3**

Del 99.5 = .891 [cm] Tw-Tinf = 3.960 [C] Upw = 16.86 [m/S]
Qwall = 152.0 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	10.13	-.09	32.40	2.102	.998	.662	-.322	-.957
2	.070	10.99	-.43	32.21	1.914	.905	.597	-.519	-.774
3	.120	12.38	-.50	31.80	1.816	.845	.521	-.530	-.710
4	.220	13.91	-.57	31.34	1.835	.800	.557	-.553	-.826
5	.320	14.97	-.59	31.01	1.614	.683	.515	-.391	-.684
6	.420	15.66	-.63	30.78	1.363	.627	.457	-.315	-.500
7	.520	16.16	-.62	30.59	1.019	.516	.368	-.160	-.293
8	.620	16.35	-.62	30.51	.877	.462	.316	-.144	-.208
9	.720	16.61	-.60	30.41	.631	.391	.243	-.074	-.114
10	.820	16.72	-.59	30.35	.442	.332	.184	-.035	-.048
11	.920	16.79	-.60	30.33	.339	.293	.127	-.023	-.023
12	1.120	16.86	-.59	30.30	.227	.270	.073	-.008	-.007

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.217	-.078	+.0995	24.021	-6.844	+.423	1.000
2	+.209	-.290	+.1017	22.785	-6.521	+.712	1.000
3	+.161	-.335	+.0664	19.838	-5.747	+.955	1.000
4	+.181	-.628	+.1810	14.549	-4.350	+.916	1.000
5	+.134	-.503	+.1626	10.076	-3.153	+.913	1.000
6	+.114	-.457	+.1607	6.417	-2.158	+.927	1.000
7	+.073	-.219	+.0951	3.573	-1.364	+.829	1.000
8	+.059	-.216	+.0840	1.543	-.771	+1.212	1.000
9	+.035	-.126	+.0561	.327	-.379	+2.445	1.000
10	+.023	-.043	+.0264	-.075	-.186	-3.611	1.000
11	+.012	-.019	+.0126	.338	-.199	+1.125	1.000
12	+.003	-.009	+.0027	3.605	-.822	+.399	1.000

FILE NAME : IVT011983 Station 3

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U = SUM(A(N) * Y^N)

A0= +9.2091E+00 A1= +2.7255E+01 A2= -3.3356E+01 A3= +1.3570E+01

Y	U	UC	% DIFF
.0500	10.1294	10.490	+3.561
.0700	10.9941	10.958	-.327
.1200	12.3755	12.023	-2.850
.2200	13.9062	13.735	-1.229
.3200	14.9697	14.960	-.067
.4200	15.6577	15.778	+.765
.5200	16.1570	16.270	+.701
.6200	16.3492	16.519	+1.040
.7200	16.6099	16.606	-.024
.8200	16.7249	16.612	-.677
.9200	16.7931	16.618	-1.042
1.1200	16.8602	16.958	+.581

****

T = SUM(A(N) * Y^N)

A0= +3.2689E+01 A1= -7.6887E+00 A2= +8.6948E+00 A3= -3.3508E+00

Y	T	TC	% DIFF
.0500	32.3967	32.326	-.217
.0700	32.2060	32.193	-.048
.1200	31.7965	31.886	+.282
.2200	31.3350	31.383	+.153
.3200	31.0092	31.010	+.001
.4200	30.7797	30.746	-.111
.5200	30.5941	30.571	-.075
.6200	30.5104	30.466	-.145
.7200	30.4077	30.410	+.008
.8200	30.3532	30.384	+.100
.9200	30.3266	30.366	+.129
1.1200	30.3003	30.277	-.077

****

IVT011984 **Station 4**

Del 99.5 = 1.339 [cm] Tw-Tinf = 3.620 [C] Upw = 16.86 [m/S]
Qwall = 154.5 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	9.28	+.38	32.09	1.571	.850	.456	-.147	-.440
2	.090	11.27	-.43	31.79	1.566	.862	.393	-.519	-.389
3	.190	12.65	-.49	31.41	1.443	.806	.364	-.537	-.373
4	.340	13.81	-.55	31.11	1.370	.742	.351	-.446	-.345
5	.490	14.75	-.61	30.86	1.289	.699	.359	-.389	-.344
6	.640	15.53	-.62	30.66	1.160	.602	.335	-.297	-.292
7	.790	15.98	-.64	30.53	1.014	.544	.317	-.218	-.242
8	.940	16.35	-.63	30.39	.818	.455	.266	-.140	-.162
9	1.090	16.63	-.65	30.31	.604	.355	.209	-.069	-.091
10	1.240	16.73	-.65	30.25	.462	.334	.174	-.055	-.053
11	1.390	16.81	-.64	30.24	.374	.315	.140	-.035	-.029
12	1.540	16.83	-.65	30.22	.303	.279	.103	-.021	-.017

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.145	-.357	+.0353	16.561	-3.703	+.227	1.000
2	+.156	-.383	+.0714	15.418	-3.478	+.752	1.000
3	+.133	-.144	+.0280	12.744	-2.851	+.938	1.000
4	+.118	-.113	+.0245	9.227	-2.247	+.922	1.000
5	+.113	-.225	+.0599	6.304	-1.650	+.900	1.000
6	+.095	-.215	+.0654	3.975	-1.158	+.914	1.000
7	+.081	-.209	+.0649	2.239	-.772	+.929	1.000
8	+.055	-.155	+.0512	1.097	-.492	+1.145	1.000
9	+.032	-.068	+.0294	.548	-.318	+1.278	1.000
10	+.027	-.059	+.0262	.592	-.250	+.836	1.000
11	+.018	-.034	+.0174	1.230	-.287	+.446	1.000
12	+.011	-.020	+.0089	2.462	-.431	+.348	1.000

FILE NAME : IVT011954 Station 4

****

U = SUM(A(N) * Y^N)

A0= +9.2160E+00 A1= +1.8050E+01 A2= -1.5216E+01 A3= +4.3963E+00

Y	U	UC	% DIFF
.0500	9.2848	10.081	+8.576
.0900	11.2660	10.720	-4.843
.1900	12.6469	12.126	-4.116
.3400	13.8074	13.767	-.295
.4900	14.7468	14.924	+1.202
.6400	15.5313	15.688	+1.007
.7900	15.9837	16.146	+1.017
.9400	16.3495	16.389	+.241
1.0900	16.6294	16.505	-.749
1.2400	16.7324	16.563	-.893
1.3900	16.8133	16.712	-.601
1.5400	16.8315	16.982	+.892

****

T = SUM(A(N) * Y^N)

A0= +3.2173E+01 A1= -3.9942E+00 A2= +2.9689E+00 A3= -7.8439E-01

Y	T	TC	% DIFF
.0500	32.0885	31.980	-.337
.0900	31.7910	31.837	+.144
.1900	31.4106	31.516	+.334
.3400	31.1100	31.127	+.055
.4900	30.8813	30.836	-.082
.6400	30.6615	30.627	-.113
.7900	30.5258	30.483	-.139
.9400	30.3902	30.390	-.001
1.0900	30.3053	30.331	+.070
1.2400	30.2534	30.289	+.119
1.3900	30.2384	30.250	+.040
1.5400	30.2243	30.198	-.087

****

IVT011995 **Station 5**

Del 99.5 = 1.749 [cm] Tw-Tinf = 3.560 [C] Upw = 16.86 [m/S]
Qwall = 154.8 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	10.62	-.36	31.94	1.647	.882	.459	-.484	-.449
2	.095	11.63	-.41	31.67	1.476	.839	.385	-.551	-.378
3	.245	13.12	-.50	31.24	1.351	.765	.328	-.464	-.308
4	.395	14.16	-.56	30.96	1.275	.720	.321	-.430	-.290
5	.545	14.90	-.63	30.76	1.222	.684	.318	-.362	-.279
6	.695	15.44	-.63	30.60	1.206	.621	.316	-.338	-.286
7	.845	15.93	-.66	30.44	1.029	.552	.301	-.234	-.230
8	.995	16.32	-.64	30.34	.940	.499	.281	-.181	-.192
9	1.145	16.61	-.62	30.26	.824	.449	.258	-.149	-.157
10	1.295	16.77	-.65	30.18	.679	.390	.225	-.094	-.111
11	1.495	17.01	-.66	30.14	.528	.353	.186	-.065	-.067
12	1.695	17.10	-.64	30.11	.417	.307	.139	-.041	-.037
13	1.895	17.16	-.66	30.09	.283	.296	.104	-.020	-.015
14	2.195	17.18	-.64	30.06	.216	.281	.066	-.012	-.005

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.186	-.408	+.1305	10.652	-2.974	+.728	1.000
2	+.153	-.262	+.0549	10.079	-2.816	+1.008	1.000
3	+.120	-.084	+.0061	8.284	-2.320	+1.080	1.000
4	+.115	-.156	+.0344	6.670	-1.875	+1.053	1.000
5	+.104	-.142	+.0327	5.236	-1.479	+.987	1.000
6	+.100	-.158	+.0436	3.983	-1.132	+.965	1.000
7	+.076	-.145	+.0440	2.910	-.836	+.880	1.000
8	+.066	-.134	+.0398	2.017	-.589	+.803	1.000
9	+.058	-.115	+.0422	1.304	-.391	+.772	1.000
10	+.044	-.099	+.0369	.771	-.244	+.672	1.000
11	+.030	-.065	+.0265	.342	-.124	+.791	1.000
12	+.020	-.028	+.0140	.232	-.093	+.821	1.000
13	+.013	-.017	+.0096	.444	-.150	+.537	1.000
14	+.007	-.011	+.0056	1.362	-.401	+.527	1.000

FILE NAME : TUT0119SS Station 5

****

U = SUM(A(N) * Y^N)

A0= +1.0458E+01 A1= +1.1308E+01 A2= -6.6622E+00 A3= +1.3353E+00

Y	U	UC	% DIFF
.0500	10.6168	11.006	+3.670
.0950	11.6286	11.473	-1.340
.2450	13.1184	12.848	-2.063
.3950	14.1603	13.967	-1.364
.5450	14.9046	14.858	-.313
.6950	15.4421	15.547	+.680
.8450	15.9299	16.062	+.828
.9950	16.3231	16.429	+.649
1.1450	16.6081	16.676	+.407
1.2950	16.7718	16.829	+.342
1.4950	17.0058	16.935	-.416
1.6950	17.1040	16.987	-.683
1.8950	17.1613	17.049	-.652
2.1950	17.1940	17.302	+.630

****

T = SUM(A(N) * Y^N)

A0= +3.1991E+01 A1= -3.1553E+00 A2= +1.8390E+00 A3= -3.6798E-01

Y	T	TC	% DIFF
.0500	31.9411	31.838	-.324
.0950	31.6704	31.707	+.117
.2450	31.2375	31.323	+.273
.3950	30.9552	31.009	+.173
.5450	30.7604	30.758	-.008
.6950	30.6020	30.563	-.129
.8450	30.4395	30.416	-.078
.9950	30.3362	30.309	-.088
1.1450	30.2627	30.237	-.086
1.2950	30.1803	30.190	+.031
1.4950	30.1419	30.154	+.041
1.6950	30.1069	30.134	+.090
1.8950	30.0898	30.111	+.071
2.1950	30.0573	30.034	-.079

****

Case 3:

Mean and fluctuating velocity:	UP0207
Mean temperature:	T0216
Stanton number:	ST0213
Shear stress:	UV0207
Turbulent heat flux and Pr_t:	VT0213

FILE: UF0207S1

STATION: 1

XSTA = .114 [m]
Cf = 7.000E-3
Upw = 9.07 [m/S]
Visc = 1.598E-5 [m^2/S]
REx = 6.490E+4
Del995 = 3.579E-3 [m]

DEL1 = 5.159E-4 [m]
DEL2 = 3.019E-4 [m]
H = 1.709
REdel1 = 2.929E+2
REdel2 = 1.714E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.002	2.180	.67	4.06	.006	7.450
2	.007	2.260	2.35	4.21	.020	7.738
3	.012	2.384	4.03	4.44	.034	8.174
4	.017	2.973	5.71	5.54	.048	10.107
5	.022	3.518	7.39	6.55	.061	11.711
6	.027	4.029	9.07	7.50	.075	13.010
7	.032	4.561	10.75	8.50	.089	13.629
8	.037	4.977	12.43	9.27	.103	14.002
9	.042	5.386	14.11	10.03	.117	14.565
10	.047	5.762	15.79	10.73	.131	15.071
11	.052	6.067	17.47	11.30	.145	14.712
12	.057	6.334	19.15	11.80	.159	15.053
13	.062	6.584	20.83	12.27	.173	14.860
14	.072	7.036	24.19	13.11	.201	14.713
15	.082	7.342	27.55	13.68	.229	14.432
16	.092	7.609	30.90	14.18	.257	14.363
17	.102	7.774	34.26	14.48	.285	13.943
18	.117	8.120	39.30	15.13	.327	13.335
19	.142	8.415	47.70	15.68	.397	12.511
20	.182	8.683	61.14	16.17	.509	11.777
21	.282	8.948	94.73	16.66	.788	10.478
22	.382	9.055	128.32	16.87	1.067	10.173
23	.482	9.056	161.91	16.87	1.347	9.707
24	.582	9.053	195.50	16.86	1.626	9.688
25	.782	9.045	262.69	16.85	2.185	9.548
26	1.082	9.103	363.46	16.96	3.023	9.695

FILE: UP020752

STATION: 2

XSTA = .343 [m]
Cf = 5.750E-3
Upw = 9.31 [m/S]
Visc = 1.608E-5 [m^2/S]
REx = 1.985E+5
Del995 = 1.146E-2 [m]

DEL1 = 1.204E-3 [m]
DEL2 = 8.317E-4 [m]
H = 1.447
REdel1 = 6.969E+2
REdel2 = 4.816E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.010	2.337	3.10	4.68	.009	8.035
2	.015	2.487	4.66	4.98	.013	8.675
3	.020	2.919	6.21	5.85	.017	10.081
4	.025	3.497	7.76	7.01	.022	11.587
5	.030	3.952	9.31	7.92	.026	12.795
6	.035	4.389	10.87	8.79	.031	13.131
7	.040	4.726	12.42	9.47	.035	13.530
8	.045	5.074	13.97	10.17	.039	13.519
9	.050	5.361	15.52	10.74	.044	13.579
10	.055	5.584	17.08	11.19	.048	13.240
11	.065	5.941	20.18	11.90	.057	13.214
12	.075	5.975	23.28	11.97	.065	13.351
13	.085	6.457	26.39	12.94	.074	12.553
14	.095	6.614	29.49	13.25	.083	12.113
15	.115	6.974	35.70	13.97	.100	11.773
16	.165	7.395	51.23	14.82	.144	10.698
17	.215	7.726	66.75	15.48	.188	10.548
18	.265	7.956	82.27	15.94	.231	10.141
19	.315	8.154	97.79	16.34	.275	9.972
20	.415	8.478	128.84	16.99	.362	9.628
21	.515	8.730	159.89	17.49	.449	9.357
22	.615	8.981	190.93	17.99	.537	9.076
23	.715	9.039	221.98	18.11	.624	8.761
24	.815	9.137	253.02	18.31	.711	8.555
25	.915	9.227	284.07	18.49	.799	8.459
26	1.015	9.221	315.12	18.48	.886	8.236
27	1.115	9.250	346.16	18.53	.973	8.334
28	1.265	9.305	392.73	18.64	1.104	8.007
29	1.465	9.301	454.82	18.64	1.279	8.054
30	1.665	9.315	516.91	18.66	1.453	7.845

FILE: UP020753

STATION: 3

XSTA = .572 [m]
Cf = 4.850E-3
Upw = 9.24 [m/S]
Visc = 1.613E-5 [m^2/S]
REx = 3.273E+5
Del995 = 1.839E-2 [m]

DEL1 = 2.022E-3 [m]
DEL2 = 1.433E-3 [m]
H = 1.411
REdel1 = 1.158E+3
REdel2 = 8.208E+2

	Y [cm]	U [m/s]	Y+	U+	Y/Del995	u'/Upw
1	.022	2.444	6.21	5.37	.012	8.673
2	.027	2.978	7.62	6.54	.015	10.469
3	.032	3.357	9.03	7.38	.017	11.493
4	.037	3.785	10.44	8.32	.020	12.186
5	.042	4.205	11.85	9.24	.023	12.495
6	.047	4.537	13.26	9.97	.026	12.965
7	.052	4.802	14.67	10.55	.028	12.761
8	.057	5.057	16.06	11.11	.031	12.752
9	.067	5.398	18.90	11.86	.036	12.598
10	.077	5.637	21.72	12.39	.042	12.367
11	.092	5.933	25.95	13.04	.050	11.850
12	.107	6.128	30.18	13.47	.058	11.526
13	.127	6.348	35.82	13.95	.069	11.153
14	.177	6.784	49.93	14.91	.096	10.477
15	.227	7.025	64.03	15.44	.123	10.157
16	.277	7.236	78.13	15.90	.151	9.997
17	.377	7.638	106.34	16.79	.205	9.608
18	.477	7.950	134.54	17.47	.259	9.456
19	.577	8.209	162.75	18.04	.314	9.258
20	.677	8.397	190.96	18.45	.368	9.170
21	.827	8.609	233.27	18.92	.450	8.619
22	.977	8.762	275.58	19.25	.531	8.446
23	1.177	8.954	331.99	19.68	.640	7.981
24	1.377	9.049	388.40	19.89	.749	7.856
25	1.577	9.130	444.82	20.06	.858	7.627
26	1.777	9.185	501.23	20.18	.966	7.350
27	1.977	9.216	557.64	20.25	1.075	7.273
28	2.177	9.229	614.05	20.28	1.184	7.195
29	2.377	9.206	670.47	20.23	1.293	7.153
30	2.577	9.234	726.88	20.29	1.401	6.996

FILE: UP020754

STATION: 4

XSTA = .800 [m]
Cf = 4.700E-3
Upw = 9.19 [m/S]
Visc = 1.617E-5 [m^2/S]
REx = 4.549E+5
Del99S = 2.451E-2 [m]

DEL1 = 2.599E-3 [m]
DEL2 = 1.905E-3 [m]
H = 1.364
REdel1 = 1.477E+3
REdel2 = 1.083E+3

	Y [cm]	U [m/s]	Y+	U+	Y/Del99S	u'/Upw
1	.017	2.065	4.69	4.63	.007	7.309
2	.022	2.380	6.06	5.34	.009	8.345
3	.027	2.821	7.44	6.33	.011	9.864
4	.032	3.289	8.82	7.38	.013	11.263
5	.037	3.691	10.20	8.28	.015	11.816
6	.042	4.044	11.58	9.07	.017	12.490
7	.047	4.319	12.95	9.69	.019	12.525
8	.052	4.602	14.33	10.32	.021	12.470
9	.057	4.808	15.71	10.78	.023	12.385
10	.062	5.024	17.09	11.27	.025	12.561
11	.072	5.319	19.84	11.93	.029	12.216
12	.082	5.525	22.60	12.40	.033	11.880
13	.102	5.855	28.11	13.14	.042	11.489
14	.122	6.166	33.62	13.84	.050	10.819
15	.172	6.524	47.41	14.64	.070	10.272
16	.222	6.798	61.19	15.25	.091	10.012
17	.272	6.974	74.97	15.65	.111	9.788
18	.372	7.316	102.53	16.42	.152	9.519
19	.472	7.582	130.09	17.01	.193	9.408
20	.672	7.982	185.21	17.91	.274	9.193
21	.872	8.267	240.34	18.55	.356	8.758
22	1.072	8.494	295.46	19.06	.437	8.411
23	1.272	8.705	350.58	19.53	.519	8.068
24	1.472	8.810	405.70	19.77	.601	7.678
25	1.672	8.953	460.83	20.09	.682	7.266
26	1.872	9.035	515.95	20.27	.764	7.130
27	2.072	9.058	571.07	20.32	.845	6.929
28	2.272	9.129	626.19	20.48	.927	6.804
29	2.472	9.150	681.32	20.53	1.009	6.624
30	2.672	9.148	736.44	20.53	1.090	6.473

31	2.972	9.189	819.12	20.62	1.213	6.426
32	3.272	9.216	901.81	20.68	1.335	6.342
33	3.572	9.192	984.49	20.63	1.457	6.237
34	3.972	9.195	1094.74	20.63	1.621	6.063

FILE: T0216S1

STATION: 1

Xsta = .114 [m]
Tw = 34.30 [C]
Tinf = 30.13 [C]
Qw = 1.978E+2 [W/m^2]
Yeff = -2.000E-5 [m]
Cond = 13.20

Del-ther = 5.119E-3 [m]
Del-enth = 3.470E-4 [m]
Del-cond = 5.611E-4 [m]
Re-enth = 1.966E+2
Prt = 1.000
Qadded = 15.51 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	-.002	0.000	0.00	0.00	0.000	0.000
2	+0.000	34.263	0.00	.12	0.000	.009
3	+.005	34.063	1.66	.76	.010	.057
4	+.008	33.866	2.66	1.39	.016	.104
5	+.011	33.619	3.65	2.17	.021	.163
6	+.014	33.361	4.66	3.00	.027	.225
7	+.017	33.150	5.67	3.67	.033	.275
8	+.020	32.962	6.67	4.27	.039	.320
9	+.025	32.686	8.36	5.15	.049	.386
10	+.030	32.454	10.04	5.90	.059	.442
11	+.035	32.207	11.73	6.69	.068	.501
12	+.040	32.022	13.42	7.29	.078	.545
13	+.045	31.847	15.11	7.85	.088	.587
14	+.055	31.555	18.50	8.79	.107	.657
15	+.065	31.307	21.90	9.59	.127	.716
16	+.075	31.136	25.29	10.15	.147	.757
17	+.090	30.898	30.39	10.93	.176	.814
18	+.110	30.698	37.19	11.57	.215	.862
19	+.130	30.538	44.00	12.09	.254	.900
20	+.150	30.432	50.79	12.43	.293	.925
21	+.170	30.368	57.59	12.65	.332	.941
22	+.200	30.297	67.78	12.87	.391	.957
23	+.240	30.235	81.36	13.07	.469	.972
24	+.290	30.206	98.33	13.17	.567	.979
25	+.390	30.157	132.28	13.33	.762	.991
26	+.490	30.141	166.21	13.38	.957	.995
27	+.690	30.126	234.07	13.43	1.348	.998
28	+.890	30.120	301.93	13.45	1.739	1.000
29	+1.390	30.117	471.56	13.46	2.716	1.000

FILE: T021652

STATION: 2

Xsta = .343 [m]
Tw = 35.50 [C]
Tinf = 30.06 [C]
Qw = 1.907E+2 [W/m^2]
Yeff = +0.000E+0 [m]
Cond = 14.00

Del-ther = 1.488E-2 [m]
Del-enth = 9.638E-4 [m]
Del-cond = 7.518E-4 [m]
Re-enth = 5.582E+2
Prt = 1.000
Qadded = 56.67 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.005	34.989	1.53	1.62	.003	.098
2	+.009	34.952	2.45	1.67	.005	.101
3	+.012	34.831	3.68	2.04	.008	.124
4	+.015	34.607	4.61	2.72	.010	.165
5	+.018	34.355	5.54	3.50	.012	.212
6	+.021	34.073	6.47	4.37	.014	.264
7	+.024	33.862	7.41	5.02	.016	.303
8	+.027	33.662	8.34	5.63	.018	.341
9	+.032	33.371	9.91	6.53	.022	.394
10	+.037	33.114	11.47	7.33	.025	.442
11	+.042	32.939	13.03	7.87	.028	.475
12	+.047	32.764	14.60	8.41	.032	.507
13	+.052	32.617	16.17	8.87	.035	.534
14	+.062	32.331	19.31	9.75	.042	.587
15	+.072	32.149	22.44	10.32	.048	.621
16	+.082	32.007	25.58	10.76	.055	.647
17	+.092	31.845	28.73	11.27	.062	.677
18	+.112	31.641	35.01	11.90	.075	.715
19	+.132	31.484	41.31	12.40	.089	.744
20	+.152	31.368	47.60	12.77	.102	.766
21	+.182	31.211	57.04	13.25	.122	.795
22	+.212	31.092	66.49	13.63	.142	.817
23	+.262	30.934	82.25	14.12	.176	.846
24	+.312	30.798	98.02	14.56	.210	.872
25	+.362	30.687	113.80	14.89	.243	.892
26	+.462	30.524	145.37	15.41	.310	.922
27	+.562	30.413	176.95	15.76	.378	.943
28	+.662	30.337	208.53	16.00	.445	.957
29	+.862	30.220	271.72	16.37	.579	.978
30	+1.062	30.174	334.88	16.51	.714	.987
31	+1.262	30.146	397.97	16.60	.848	.992
32	+1.562	30.125	492.64	16.66	1.050	.996
33	+2.062	30.105	650.41	16.73	1.386	1.000
34	+2.562	30.102	808.14	16.74	1.722	1.000

FILE: T021653

STATION: 3

Xsta = .572 [m]
Tw = 36.18 [C]
Tinf = 30.04 [C]
Qw = 1.867E+2 [W/m^2]
Yeff = +3.000E-5 [m]
Cond = 13.80

Del-ther = 2.343E-2 [m]
Del-enth = 1.534E-3 [m]
Del-cond = 8.732E-4 [m]
Re-enth = 8.810E+2
Prt = 1.000
Qadded = 102.05 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.010	35.422	2.79	2.17	.004	.124
2	+.015	35.200	4.19	2.80	.006	.161
3	+.020	34.768	5.60	4.03	.009	.231
4	+.025	34.353	7.02	5.22	.011	.299
5	+.030	34.033	8.44	6.14	.013	.351
6	+.035	33.769	9.86	6.90	.015	.394
7	+.040	33.530	11.28	7.59	.017	.433
8	+.050	33.116	14.14	8.78	.021	.501
9	+.060	32.882	16.99	9.46	.026	.539
10	+.070	32.660	19.84	10.10	.030	.575
11	+.080	32.497	22.70	10.58	.034	.602
12	+.100	32.214	28.42	11.40	.043	.648
13	+.120	32.052	34.14	11.87	.051	.674
14	+.140	31.899	39.86	12.31	.060	.699
15	+.160	31.779	45.59	12.66	.068	.719
16	+.210	31.573	59.90	13.27	.090	.753
17	+.260	31.402	74.24	13.76	.111	.780
18	+.310	31.243	88.60	14.23	.132	.808
19	+.360	31.139	102.95	14.54	.154	.823
20	+.410	31.028	117.32	14.88	.175	.841
21	+.510	30.839	146.10	15.41	.218	.872
22	+.610	30.698	174.89	15.83	.260	.895
23	+.810	30.518	232.47	16.35	.346	.925
24	+1.010	30.379	290.10	16.76	.431	.947
25	+1.310	30.243	376.57	17.17	.559	.970
26	+1.510	30.182	434.22	17.34	.645	.979
27	+1.810	30.127	520.65	17.51	.773	.988
28	+2.110	30.103	607.03	17.58	.901	.992
29	+2.510	30.075	722.22	17.66	1.071	.997
30	+3.010	30.062	866.16	17.70	1.285	.999
31	+3.510	30.050	1010.11	17.73	1.498	1.001

FILE: T0216S4

STATION: 4

Xsta = .800 [m]
Tw = 36.63 [C]
Tinf = 30.09 [C]
Qw = 1.844E+2 [W/m^2]
Yeff = +0.000E+0 [m]
Cond = 14.00

Del-ther = 3.012E-2 [m]
Del-enth = 2.098E-3 [m]
Del-cond = 9.479E-4 [m]
Re-enth = 1.197E+3
Prt = 1.000
Qadded = 148.64 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.007	35.974	1.91	1.85	.002	.100
2	+.012	35.947	3.27	1.93	.004	.104
3	+.017	35.707	4.64	2.60	.006	.141
4	+.022	35.190	6.02	4.06	.007	.220
5	+.027	34.857	7.40	5.01	.009	.270
6	+.037	34.183	10.18	6.93	.012	.373
7	+.047	33.776	12.97	8.09	.016	.435
8	+.057	33.419	15.76	9.11	.019	.489
9	+.067	33.177	18.55	9.80	.022	.526
10	+.077	32.951	21.34	10.45	.026	.561
11	+.097	32.700	26.93	11.17	.032	.599
12	+.117	32.453	32.52	11.89	.039	.636
13	+.137	32.294	38.12	12.34	.045	.661
14	+.157	32.175	43.71	12.69	.052	.679
15	+.187	32.007	52.11	13.17	.062	.704
16	+.227	31.839	63.32	13.66	.075	.730
17	+.277	31.669	77.35	14.15	.092	.756
18	+.377	31.444	105.41	14.80	.125	.790
19	+.527	31.190	147.57	15.57	.175	.830
20	+.727	30.933	203.90	16.38	.241	.872
21	+.977	30.680	260.33	17.03	.309	.905
22	+1.127	30.538	316.76	17.44	.374	.928
23	+1.427	30.372	401.46	17.93	.474	.953
24	+1.727	30.274	486.14	18.21	.573	.968
25	+2.127	30.180	599.07	18.49	.706	.983
26	+2.627	30.126	740.12	18.64	.872	.991
27	+3.127	30.090	881.18	18.75	1.038	.996
28	+3.627	30.077	1022.15	18.79	1.204	.998
29	+4.627	30.054	1304.14	18.86	1.536	1.002

FILENAME: ST0213

Uinf: 9.51 [m/s]
HEAT FLUX TO HEATER: 224.4 [W/m^2]
HEAT LOSS THROUGH BACK WALL OVER DA: .101 [W]
FREESTREAM TEMPERATURE: 30.58 [C]

	Twall [C]	REx	Enth [m]	Qconv [W/m^2]	St
1	32.81	+2.184E+4	+6.575E-6	+1.980E+2	+8.237E-3
2	33.63	+3.631E+4	+1.654E-4	+2.033E+2	+6.166E-3
3	34.53	+5.070E+4	+2.550E-4	+1.981E+2	+4.657E-3
4	35.44	+6.501E+4	+3.358E-4	+1.926E+2	+3.690E-3
5	35.36	+7.948E+4	+4.223E-4	+1.935E+2	+3.763E-3
6	35.64	+9.385E+4	+5.022E-4	+1.916E+2	+3.522E-3
7	35.64	+1.083E+5	+5.922E-4	+1.917E+2	+3.527E-3
8	35.63	+1.227E+5	+6.676E-4	+1.918E+2	+3.532E-3
9	35.87	+1.371E+5	+7.193E-4	+1.904E+2	+3.354E-3
10	36.16	+1.514E+5	+7.877E-4	+1.885E+2	+3.135E-3
11	36.07	+1.658E+5	+8.744E-4	+1.892E+2	+3.207E-3
12	36.10	+1.802E+5	+9.464E-4	+1.891E+2	+3.191E-3
13	36.19	+1.946E+5	+1.002E-3	+1.866E+2	+3.133E-3
14	36.39	+2.089E+5	+1.062E-3	+1.873E+2	+3.005E-3
15	36.39	+2.233E+5	+1.136E-3	+1.874E+2	+3.007E-3
16	36.41	+2.377E+5	+1.201E-3	+1.873E+2	+2.953E-3
17	36.50	+2.521E+5	+1.274E-3	+1.867E+2	+2.939E-3
18	36.43	+2.665E+5	+1.325E-3	+1.872E+2	+2.980E-3
19	36.71	+2.807E+5	+1.348E-3	+1.854E+2	+2.818E-3
20	36.90	+2.949E+5	+1.405E-3	+1.843E+2	+2.720E-3
21	36.83	+3.094E+5	+1.491E-3	+1.848E+2	+2.754E-3
22	36.76	+3.238E+5	+1.545E-3	+1.853E+2	+2.794E-3
23	36.97	+3.380E+5	+1.565E-3	+1.840E+2	+2.685E-3
24	37.16	+3.522E+5	+1.613E-3	+1.828E+2	+2.590E-3
25	37.13	+3.666E+5	+1.706E-3	+1.830E+2	+2.606E-3
26	36.95	+3.812E+5	+1.825E-3	+1.841E+2	+2.697E-3
27	36.76	+3.958E+5	+1.892E-3	+1.853E+2	+2.795E-3
28	36.96	+4.100E+5	+1.886E-3	+1.840E+2	+2.690E-3
29	37.27	+4.240E+5	+1.904E-3	+1.821E+2	+2.538E-3
30	37.30	+4.383E+5	+1.961E-3	+1.820E+2	+2.525E-3
31	37.32	+4.526E+5	+2.044E-3	+1.818E+2	+2.517E-3
32	37.18	+4.672E+5	+2.130E-3	+1.826E+2	+2.585E-3
33	37.19	+4.816E+5	+2.154E-3	+1.827E+2	+2.578E-3
34	37.43	+4.956E+5	+2.182E-3	+1.811E+2	+2.467E-3
35	37.42	+5.100E+5	+2.256E-3	+1.813E+2	+2.475E-3
36	37.37	+5.244E+5	+2.296E-3	+1.817E+2	+2.497E-3
37	37.55	+5.385E+5	+2.298E-3	+1.805E+2	+2.417E-3
38	37.74	+5.526E+5	+2.348E-3	+1.793E+2	+2.340E-3
39	37.61	+5.671E+5	+2.451E-3	+1.802E+2	+2.392E-3

40	37.49	+5.817E+5	+2.530E-3	+1.809E+2	+2.445E-3
41	37.51	+5.960E+5	+2.583E-3	+1.808E+2	+2.434E-3
42	37.54	+6.103E+5	+2.636E-3	+1.807E+2	+2.424E-3
43	37.72	+6.244E+5	+2.641E-3	+1.795E+2	+2.347E-3
44	37.68	+6.388E+5	+2.718E-3	+1.798E+2	+2.366E-3
45	37.63	+6.532E+5	+2.869E-3	+1.799E+2	+2.382E-3
46	37.22	+6.684E+5	+3.010E-3	+1.826E+2	+2.566E-3
47	37.28	+6.826E+5	+2.976E-3	+1.822E+2	+2.538E-3
48	37.66	+6.963E+5	+2.943E-3	+1.798E+2	+2.372E-3
49	37.74	+7.105E+5	+2.997E-3	+1.794E+2	+2.341E-3
50	37.69	+7.249E+5	+3.098E-3	+1.797E+2	+2.360E-3
51	37.54	+7.396E+5	+3.178E-3	+1.805E+2	+2.421E-3
52	37.60	+7.538E+5	+3.059E-3	+1.805E+2	+2.400E-3

**********CROSS-SPAN DATA**********

61	33.86	+8.925E+5	------	+2.020E+2	+5.711E-3
62	34.58	+9.052E+5	------	+1.979E+2	+4.600E-3
63	46.96	+8.881E+5	------	+1.222E+2	+7.070E-4
64	35.07	+9.328E+5	------	+1.950E+2	+4.035E-3
65	42.11	+9.286E+5	------	+1.529E+2	+1.247E-3
66	36.00	+9.592E+5	------	+1.896E+2	+3.256E-3
67	35.38	+9.753E+5	------	+1.932E+2	+3.739E-3
68	35.11	+9.906E+5	------	+1.948E+2	+3.995E-3
69	34.02	+1.006E+6	------	+2.011E+2	+5.421E-3
70	34.37	+1.022E+6	------	+1.991E+2	+4.881E-3

**********CROSS-SPAN DATA**********

71	34.63	+1.035E+6	------	+1.964E+2	+4.292E-3
72	35.67	+1.047E+6	------	+1.916E+2	+3.505E-3
73	34.72	+1.064E+6	------	+1.971E+2	+4.422E-3
74	35.77	+1.075E+6	------	+1.910E+2	+3.425E-3
75	35.86	+1.089E+6	------	+1.905E+2	+3.359E-3
76	35.99	+1.103E+6	------	+1.897E+2	+3.262E-3
77	35.97	+1.118E+6	------	+1.898E+2	+3.278E-3
78	35.88	+1.133E+6	------	+1.903E+2	+3.341E-3
79	36.17	+1.146E+6	------	+1.886E+2	+3.143E-3
80	36.22	+1.160E+6	------	+1.884E+2	+3.112E-3
81	36.15	+1.175E+6	------	+1.887E+2	+3.153E-3
82	35.95	+1.190E+6	------	+1.899E+2	+3.295E-3
83	35.19	+1.207E+6	------	+1.943E+2	+3.916E-3
84	34.20	+1.225E+6	------	+2.000E+2	+5.132E-3
85	35.71	+1.234E+6	------	+1.913E+2	+3.468E-3
86	35.37	+1.250E+6	------	+1.933E+2	+3.754E-3

**********CROSS-SPAN DATA**********

87	35.34	+1.264E+6	------	+1.935E+2	+3.782E-3
88	35.23	+1.276E+6	------	+1.883E+2	+3.101E-3
89	36.58	+1.289E+6	------	+1.864E+2	+2.903E-3
90	36.75	+1.303E+6	------	+1.852E+2	+2.797E-3
91	36.81	+1.317E+6	------	+1.849E+2	+2.767E-3
92	36.94	+1.331E+6	------	+1.841E+2	+2.701E-3

93	36.80	+1.346E+6	------	+1.849E+2	+2.771E-3
94	36.63	+1.361E+6	------	+1.860E+2	+2.867E-3
95	36.74	+1.375E+6	------	+1.853E+2	+2.805E-3
96	36.66	+1.389E+6	------	+1.858E+2	+2.849E-3
97	36.67	+1.404E+6	------	+1.857E+2	+2.840E-3
98	36.54	+1.419E+6	------	+1.865E+2	+2.917E-3
99	37.14	+1.431E+6	------	+1.830E+2	+2.603E-3
100	36.50	+1.448E+6	------	+1.867E+2	+2.940E-3
101	36.35	+1.463E+6	------	+1.876E+2	+3.031E-3
102	36.43	+1.477E+6	------	+1.871E+2	+2.978E-3

**********CROSS-SPAN DATA**********

103	35.73	+1.494E+6	------	+1.912E+2	+3.455E-3
104	36.83	+1.504E+6	------	+1.848E+2	+2.754E-3
105	36.89	+1.517E+6	------	+1.839E+2	+2.677E-3
106	37.16	+1.531E+6	------	+1.828E+2	+2.582E-3
107	37.50	+1.544E+6	------	+1.808E+2	+2.441E-3
108	37.56	+1.558E+6	------	+1.805E+2	+2.413E-3
109	37.56	+1.572E+6	------	+1.805E+2	+2.413E-3
110	37.46	+1.587E+6	------	+1.811E+2	+2.458E-3
111	37.42	+1.602E+6	------	+1.813E+2	+2.475E-3
112	37.32	+1.617E+6	------	+1.819E+2	+2.518E-3
113	37.24	+1.631E+6	------	+1.824E+2	+2.554E-3
114	37.20	+1.646E+6	------	+1.826E+2	+2.573E-3
115	37.15	+1.661E+6	------	+1.829E+2	+2.595E-3
116	37.08	+1.675E+6	------	+1.833E+2	+2.630E-3
117	36.82	+1.691E+6	------	+1.848E+2	+2.763E-3
118	36.69	+1.706E+6	------	+1.856E+2	+2.834E-3

**********CROSS-SPAN DATA**********

119	36.55	+1.721E+6	------	+1.864E+2	+2.908E-3
120	37.60	+1.730E+6	------	+1.802E+2	+2.357E-3
121	37.75	+1.744E+6	------	+1.793E+2	+2.335E-3
122	37.89	+1.757E+6	------	+1.785E+2	+2.279E-3
123	37.84	+1.772E+6	------	+1.788E+2	+2.300E-3
124	37.67	+1.787E+6	------	+1.798E+2	+2.367E-3
125	37.53	+1.802E+6	------	+1.807E+2	+2.427E-3
126	37.53	+1.817E+6	------	+1.807E+2	+2.427E-3
127	37.14	+1.833E+6	------	+1.830E+2	+2.603E-3
128	36.91	+1.849E+6	------	+1.843E+2	+2.717E-3

**********CROSS-SPAN DATA**********

129	36.60	+1.865E+6	------	+1.861E+2	+2.860E-3
130	37.66	+1.872E+6	------	+1.787E+2	+2.291E-3
131	38.35	+1.884E+6	------	+1.758E+2	+2.115E-3
132	38.23	+1.899E+6	------	+1.765E+2	+2.156E-3
133	37.90	+1.915E+6	------	+1.784E+2	+2.276E-3
134	37.69	+1.931E+6	------	+1.797E+2	+2.361E-3
135	37.16	+1.948E+6	------	+1.828E+2	+2.592E-3
136	36.63	+1.965E+6	------	+1.859E+2	+2.862E-3
137	36.31	+1.982E+6	------	+1.878E+2	+3.056E-3
138	36.31	+1.998E+6	------	+1.878E+2	+3.056E-3

RAW DATA--FILE NAME: UV0207S1 Station 1

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	6.103	-.043	.995	.717	-.086
2	.075	6.994	-.393	1.101	.742	-.199
3	.090	7.604	-.509	1.169	.723	-.248
4	.110	8.212	-.623	1.133	.661	-.253
5	.130	8.598	-.578	1.099	.587	-.219
6	.150	8.802	-.617	1.024	.538	-.179
7	.170	9.013	-.612	1.003	.499	-.150
8	.200	9.275	-.673	.955	.491	-.128
9	.230	9.344	-.673	.940	.447	-.115
10	.260	9.388	-.632	.903	.440	-.110
11	.290	9.501	-.673	.906	.439	-.118
12	.320	9.504	-.651	.880	.433	-.092
13	.350	9.520	-.687	.873	.453	-.096
14	.390	9.579	-.658	.856	.457	-.085
15	.440	9.569	-.704	.848	.484	-.098
16	.540	9.569	-.712	.830	.499	-.071
17	.740	9.561	-.711	.830	.561	-.122
18	1.040	9.551	-.768	.849	.632	-.159
19	1.340	9.538	-.776	.820	.652	-.136
20	1.640	9.582	-.776	.831	.695	-.155
21	2.540	9.636	-.795	.785	.719	-.122

Upw [m/s]= 9.07 DEL995 [cm]= .366 Cf= 7.000E-3

RAW DATA--FILE NAME: UV0207S2 **Station 2**

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	6.630	-.305	1.074	.752	-.278
2	.080	7.045	-.330	1.021	.681	-.237
3	.100	7.322	-.292	1.003	.641	-.262
4	.120	7.518	-.357	.960	.592	-.216
5	.140	7.750	-.402	.955	.595	-.230
6	.170	7.943	-.409	.960	.560	-.216
7	.220	8.237	-.437	.937	.544	-.205
8	.270	8.431	-.446	.924	.521	-.204
9	.320	8.654	-.456	.914	.520	-.190
10	.420	8.954	-.488	.883	.494	-.176
11	.520	9.110	-.462	.847	.486	-.133
12	.620	9.355	-.510	.827	.477	-.110
13	.720	9.462	-.506	.808	.468	-.102
14	.870	9.580	-.502	.775	.467	-.053
15	1.070	9.648	-.519	.766	.495	-.056
16	1.270	9.650	-.511	.727	.502	-.044
17	1.470	9.690	-.504	.743	.546	-.058
18	1.670	9.718	-.496	.729	.565	-.052
19	1.970	9.698	-.536	.717	.582	-.073
20	2.470	9.717	-.545	.716	.622	-.070
21	2.970	9.713	-.558	.700	.632	-.074
22	4.270	9.699	-.541	.681	.666	-.072

Upw [m/s]= 9.31 DEL995 [cm]= 1.146 Cf= 5.750E-3

RAW DATA--FILE NAME: UV020783 Station 3

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.050	5.473	-.121	.959	.691	-.162
2	.090	6.317	-.318	1.004	.654	-.259
3	.140	6.952	-.345	.921	.596	-.236
4	.190	7.272	-.413	.952	.571	-.245
5	.240	7.550	-.416	.925	.570	-.244
6	.340	7.906	-.492	.887	.527	-.222
7	.440	8.268	-.494	.882	.520	-.221
8	.540	8.466	-.514	.840	.519	-.194
9	.690	8.762	-.528	.815	.481	-.163
10	.840	9.043	-.566	.791	.470	-.146
11	1.040	9.207	-.538	.760	.466	-.117
12	1.240	9.342	-.553	.723	.461	-.096
13	1.440	9.454	-.558	.696	.469	-.074
14	1.740	9.556	-.563	.660	.474	-.049
15	2.040	9.553	-.566	.658	.499	-.044
16	2.540	9.597	-.559	.624	.528	-.041
17	3.040	9.615	-.551	.625	.530	-.033
18	4.040	9.626	-.563	.614	.549	-.037
19	5.040	9.629	-.520	.609	.579	-.052

Upw [m/s]= 9.24 DEL995 [cm]= 1.839 Cf= 4.850E-3

RAW DATA--FILE NAME: UV020754 **Station 4**

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	6.330	-.271	.947	.585	-.201
2	.080	6.520	-.311	.939	.566	-.229
3	.110	6.732	-.308	.914	.534	-.195
4	.140	6.939	-.319	.913	.523	-.203
5	.180	7.140	-.363	.866	.522	-.183
6	.280	7.440	-.364	.889	.521	-.214
7	.380	7.736	-.394	.837	.506	-.200
8	.530	8.073	-.420	.827	.502	-.187
9	.730	8.449	-.445	.801	.490	-.169
10	.930	8.676	-.422	.762	.469	-.157
11	1.130	8.863	-.449	.743	.468	-.134
12	1.330	9.043	-.453	.698	.458	-.107
13	1.630	9.210	-.472	.683	.439	-.095
14	1.930	9.295	-.451	.641	.449	-.066
15	2.330	9.375	-.466	.608	.456	-.055
16	2.830	9.448	-.456	.585	.474	-.031
17	3.330	9.487	-.457	.583	.495	-.048
18	3.830	9.501	-.443	.560	.491	-.026
19	4.830	9.474	-.440	.563	.516	-.019

Upw [m/s]= 9.19 DEL995 [cm]= 2.451 Cf= 4.700E-3

IVT021381 **Station 1**

Del 99.5 = .366 [cm] Tw-Tinf = 4.405 [C] Upw = 9.07 [m/S]
Qwall = 195.3 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't [m-C/
1	.050	5.03	-1.59	31.90	1.177	.520	.768	-.418	-.5
2	.065	5.62	-1.71	31.49	1.208	.535	.680	-.447	-.5
3	.105	6.62	-1.94	30.88	1.077	.477	.543	-.353	-.3
4	.145	7.02	-1.99	30.61	1.026	.461	.487	-.347	-.3
5	.185	7.28	-2.07	30.45	.942	.418	.333	-.271	-.1
6	.225	7.43	-2.09	30.38	.908	.409	.311	-.255	-.1
7	.265	7.56	-2.11	30.31	.861	.395	.230	-.226	-.1
8	.305	7.61	-2.13	30.29	.812	.391	.168	-.201	-.0
9	.345	7.61	-2.12	30.26	.814	.401	.147	-.199	-.0
10	.385	7.58	-2.10	30.24	.786	.410	.120	-.183	-.0

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt
1	+.288	-.064	+.0958	30.701	-20.184	+.953
2	+.288	-.142	+.1465	26.972	-17.599	+1.022
3	+.181	-.157	+.1307	18.192	-11.558	+1.241
4	+.148	-.148	+.1125	11.102	-6.757	+1.424
5	+.078	-.071	+.0452	5.704	-3.186	+1.940
6	+.078	-.052	+.0602	1.986	-.875	+1.439
7	+.052	-.048	+.0302	-.021	.206	+42.916
8	+.034	-.020	+.0151	-.347	.047	+.797
9	+.034	-.029	+.0189	1.018	-1.352	+7.678
10	+.025	-.020	+.0102	4.074	-3.982	+7.036

FILE NAME : IVT021351 **Station 1**

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U = SUM(A(N) * Y^N)

A0= +3.2512E+00 A1= +4.4847E+01 A2= -1.5467E+02 A3= +1.7614E+02

Y	U	UC	% DIFF
.0500	5.0164	5.129	+2.242
.0650	5.6205	5.561	-1.057
.1050	6.6182	6.459	-2.409
.1450	7.0237	7.039	+.218
.1850	7.2813	7.370	+1.211
.2250	7.4318	7.518	+1.158
.2650	7.5579	7.552	-.082
.3050	7.6100	7.539	-.937
.3450	7.6131	7.547	-.875
.3850	7.5819	7.643	+.803

****

T = SUM(A(N) * Y^N)

A0= +3.3072E+01 A1= -3.0061E+01 A2= +1.0845E+02 A3= -1.2917E+02

Y	T	TC	% DIFF
.0500	31.9004	31.824	-.238
.0650	31.4857	31.541	+.163
.1050	30.8773	30.962	+.275
.1450	30.6101	30.600	-.033
.1850	30.4492	30.405	-.145
.2250	30.3640	30.328	-.185
.2650	30.3147	30.319	+.013
.3050	30.2857	30.328	+.139
.3450	30.2648	30.306	+.135
.3850	30.2397	30.203	-.121

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IVT0213S2 **Station 2**

Del 99.5 = 1.146 [cm] Tw-Tinf = 5.570 [C] Upw = 9.31 [m/S]
Qwall = 188.9 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	4.25	-1.02	32.86	.996	.487	1.146	-.247	-.482
2	.090	5.41	-1.60	32.09	1.077	.567	.876	-.431	-.568
3	.190	6.30	-1.82	31.31	.871	.491	.640	-.301	-.334
4	.290	6.70	-1.89	30.98	.855	.486	.542	-.296	-.270
5	.390	7.00	-1.94	30.77	.808	.468	.472	-.259	-.202
6	.490	7.22	-1.98	30.60	.769	.450	.409	-.251	-.159
7	.590	7.37	-2.04	30.47	.761	.432	.348	-.217	-.114
8	.690	7.50	-2.05	30.39	.760	.424	.317	-.215	-.110
9	.790	7.61	-2.11	30.31	.715	.398	.266	-.173	-.065
10	.940	7.67	-2.09	30.25	.693	.404	.227	-.154	-.045
11	1.090	7.71	-2.10	30.22	.668	.416	.190	-.147	-.035
12	1.290	7.74	-2.12	30.18	.662	.420	.166	-.134	-.026

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.327	-.033	+.1122	5.435	-4.361	+.805	1.000
2	+.307	-.140	+.1409	5.050	-4.038	+1.122	1.000
3	+.188	-.067	+.0775	4.151	-3.286	+1.270	1.000
4	+.150	-.054	+.0415	3.343	-2.615	+1.543	1.000
5	+.121	-.046	+.0410	2.627	-2.027	+1.652	1.000
6	+.103	-.047	+.0388	2.003	-1.520	+1.854	1.000
7	+.082	-.031	+.0336	1.470	-1.095	+1.976	1.000
8	+.075	-.044	+.0308	1.028	-.752	+2.084	1.000
9	+.052	-.026	+.0173	.678	-.490	+2.426	1.000
10	+.040	-.029	+.0159	.325	-.251	+2.947	1.000
11	+.032	-.011	+.0103	.177	-.195	+5.012	1.000
12	+.026	-.013	+.0085	.301	-.407	+7.082	1.000

FILE NAME : IVT021382 **Station 2**

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U = SUM(A(N) * Y^N)

A0= +5.3613E+00 A1= +5.9370E+00 A2= -5.1352E+00 A3= +1.5248E+00

Y	U	UC	% DIFF
.1900	6.3042	6.314	+.161
.2900	6.6963	6.688	-.119
.3900	7.0009	6.986	-.212
.4900	7.2222	7.217	-.075
.5900	7.3716	7.390	+.246
.6900	7.4868	7.514	+.228
.7900	7.6145	7.598	-.211
.9400	7.6876	7.671	+.046
1.0900	7.7148	7.706	-.111
1.2900	7.7440	7.748	+.051

****

T = SUM(A(N) * Y^N)

A0= +3.2059E+01 A1= -4.7841E+00 A2= +4.3313E+00 A3= -1.3617E+00

Y	T	TC	% DIFF
.1900	31.3145	31.297	-.055
.2900	30.9775	31.003	+.082
.3900	30.7654	30.771	+.020
.4900	30.5968	30.595	-.013
.5900	30.4699	30.465	-.017
.6900	30.3902	30.373	-.057
.7900	30.3070	30.312	+.015
.9400	30.2533	30.258	+.016
1.0900	30.2197	30.227	+.025
1.2900	30.1768	30.172	-.015

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IVT0213S3 **Station 3**

Del 99.5 = 1.839 [cm] Tw-Tinf = 6.220 [C] Upw = 9.24 [m/S]
Qwall = 185.1 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	4.09	-1.15	33.44	1.000	.505	1.240	-.296	-.827
2	.100	4.92	-1.52	32.58	.962	.501	1.038	-.341	-.566
3	.220	5.80	-1.74	31.70	.834	.485	.676	-.284	-.330
4	.420	6.39	-1.88	31.13	.764	.458	.556	-.249	-.248
5	.620	6.75	-1.92	30.79	.738	.441	.463	-.224	-.195
6	.820	7.03	-1.96	30.57	.716	.432	.395	-.206	-.146
7	1.020	7.28	-2.05	30.41	.693	.401	.317	-.188	-.107
8	1.220	7.38	-2.05	30.30	.633	.398	.274	-.154	-.074
9	1.420	7.51	-2.08	30.23	.631	.386	.232	-.139	-.060
10	1.620	7.56	-2.10	30.19	.603	.389	.180	-.126	-.039
11	1.920	7.63	-2.09	30.16	.587	.391	.143	-.113	-.029
12	2.220	7.65	-2.09	30.14	.590	.410	.111	-.109	-.023

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.376	-.030	+.1026	3.530	-3.433	+.764	1.000
2	+.318	-.070	+.0912	3.347	-3.235	+1.038	1.000
3	+.184	-.025	+.0416	2.928	-2.786	+1.483	1.000
4	+.146	-.028	+.0315	2.296	-2.114	+1.573	1.000
5	+.119	-.028	+.0339	1.746	-1.536	+1.657	1.000
6	+.101	-.042	+.0349	1.276	-1.054	+1.693	1.000
7	+.077	-.026	+.0223	.888	-.667	+1.815	1.000
8	+.063	-.033	+.0213	.581	-.375	+1.572	1.000
9	+.051	-.025	+.0208	.356	-.178	+1.356	1.000
10	+.036	-.010	+.0089	.212	-.076	+1.286	1.000
11	+.029	-.014	+.0102	.148	-.102	+2.583	1.000
12	+.024	-.014	+.0083	.267	-.342	+5.688	1.000

FILE NAME : IVT021383 **Station 3**

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U = SUM(A(N) * Y^N)

A0= +5.0948E+00 A1= +3.7176E+00 A2= -1.9055E+00 A3= +3.3886E-01

Y	U	UC	% DIFF
.2200	5.7990	5.824	+.434
.4200	6.3865	6.345	-.646
.6200	6.7521	6.746	-.060
.8200	7.0313	7.049	+.250
1.0200	7.2771	7.264	-.160
1.2200	7.3753	7.410	+.464
1.4200	7.5057	7.502	-.051
1.6200	7.5829	7.557	-.073
1.9200	7.6276	7.607	-.274
2.2200	7.8528	7.865	+.153

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T = SUM(A(N) * Y^N)

A0= +3.2370E+01 A1= -3.6359E+00 A2= +2.0819E+00 A3= -3.9640E-01

Y	T	TC	% DIFF
.2200	31.6579	31.666	-.102
.4200	31.1319	31.177	+.146
.6200	30.7913	30.814	+.073
.8200	30.5729	30.556	-.054
1.0200	30.4081	30.386	-.073
1.2200	30.2996	30.283	-.053
1.4200	30.2326	30.230	-.009
1.6200	30.1902	30.206	+.052
1.9200	30.1646	30.185	+.066
2.2200	30.1368	30.123	-.044

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IVT0213S4 **Station 4**

Del 99.5 = 2.451 [cm] Tw-Tinf = 6.073 [C] Upw = 9.19 [m/S]
Qwall = 181.9 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S]
1	.050	4.94	-.10	33.46	1.127	.480	1.289	-.078	-.707
2	.100	5.90	-.34	32.56	1.066	.462	.963	-.168	-.617
3	.200	6.65	-.36	31.82	.939	.477	.783	-.192	-.436
4	.450	7.47	-.41	31.14	.882	.463	.597	-.193	-.323
5	.700	8.00	-.45	30.77	.845	.444	.528	-.179	-.276
6	.950	8.33	-.46	30.53	.783	.431	.447	-.148	-.188
7	1.200	8.61	-.46	30.34	.747	.409	.386	-.121	-.150
8	1.450	8.79	-.46	30.24	.705	.400	.325	-.112	-.111
9	1.700	8.98	-.43	30.14	.687	.404	.282	-.092	-.088
10	1.950	9.05	-.43	30.07	.668	.386	.228	-.072	-.062
11	2.200	9.13	-.44	30.03	.623	.383	.187	-.054	-.043
12	2.450	9.19	-.45	30.00	.612	.381	.158	-.042	-.031
13	2.700	9.21	-.42	30.00	.618	.396	.136	-.033	-.025
14	3.200	9.25	-.44	29.99	.602	.413	.094	-.030	-.017

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.291	-.040	+.1164	3.384	-2.639	+.211	1.000
2	+.227	-.088	+.0991	3.251	-2.528	+.576	1.000
3	+.177	-.027	+.0470	2.993	-2.313	+.837	1.000
4	+.139	-.029	+.0311	2.397	-1.818	+1.054	1.000
5	+.123	-.034	+.0333	1.869	-1.382	+1.073	1.000
6	+.097	-.026	+.0247	1.409	-1.006	+1.092	1.000
7	+.083	-.032	+.0286	1.018	-.690	+.981	1.000
8	+.071	-.037	+.0278	.695	-.434	+.983	1.000
9	+.065	-.024	+.0249	.441	-.237	+.763	1.000
10	+.048	-.027	+.0169	.254	-.100	+.589	1.000
11	+.037	-.008	+.0099	.137	-.023	+.240	1.000
12	+.029	-.008	+.0060	.097	-.005	+.080	1.000
13	+.025	-.001	+.0063	.106	-.047	+.573	1.000
14	+.019	-.007	+.0057	.349	-.310	+1.416	1.000

FILE NAME : IVT0213S4 **Station 4**

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U = SUM(A(N) * Y^N)

A0= +6.0738E+00 A1= +3.5192E+00 A2= -1.3704E+00 A3= +1.8231E-01

Y	U	UC	% DIFF
.2000	6.6475	6.724	+1.156
.4500	7.4746	7.397	-1.044
.7000	7.9974	7.928	-.863
.9500	8.3327	8.337	+.047
1.2000	8.6128	8.639	+.302
1.4500	8.7925	8.851	+.669
1.7000	8.9824	8.992	+.105
1.9500	9.0492	9.077	+.311
2.2000	9.1328	9.125	-.095
2.4500	9.1910	9.151	-.431
2.7000	9.2123	9.174	-.414
3.2000	9.2473	9.277	+.318

****

T = SUM(A(N) * Y^N)

A0= +3.2249E+01 A1= -2.7527E+00 A2= +1.1460E+00 A3= -1.5924E-01

Y	T	TC	% DIFF
.2000	31.8244	31.743	-.255
.4500	31.1439	31.228	+.271
.7000	30.7650	30.829	+.209
.9500	30.5279	30.532	+.013
1.2000	30.3441	30.321	-.076
1.4500	30.2408	30.182	-.195
1.7000	30.1401	30.099	-.135
1.9500	30.0662	30.058	-.026
2.2000	30.0310	30.044	+.045
2.4500	30.0003	30.042	+.140
2.7000	30.0044	30.037	+.109
3.2000	29.9868	29.958	-.097

****

Case 4:

Mean and fluctuating velocity:	UP0729
Mean temperature:	T0829
Stanton number:	ST0831
Shear stress:	UV0817
Turbulent heat flux and Pr_t:	IVT0831

FILE: UP0729S1

STATION: 1

XSTA = .089 [m]
Cf = 2.230E-3
Upw = 16.53 [m/S]
Visc = 1.603E-5 [m^2/S]
REx = 9.170E+4
Del995 = 1.801E-3 [m]

DEL1 = 5.412E-4 [m]
DEL2 = 2.125E-4 [m]
H = 2.547
REdel1 = 5.583E+2
REdel2 = 2.192E+2

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.012	2.259	4.13	4.09	.00012	.363
2	.014	2.565	4.82	4.64	.00014	.383
3	.016	3.021	5.51	5.47	.00016	.432
4	.018	3.278	6.20	5.93	.00019	.462
5	.021	3.806	7.24	6.89	.00022	.497
6	.025	4.469	8.61	8.09	.00026	.563
7	.035	6.146	12.06	11.13	.00036	.665
8	.045	7.715	15.51	13.96	.00046	.938
9	.060	9.995	20.68	18.09	.00062	.958
10	.075	12.033	25.86	21.77	.00077	.960
11	.095	13.953	32.76	25.24	.00098	1.040
12	.125	15.725	43.12	28.44	.00129	.764
13	.155	16.368	53.48	29.59	.00160	.669
14	.195	16.555	67.31	29.92	.00201	.664
15	.245	16.590	84.61	29.97	.00253	.660
16	.295	16.593	101.93	29.96	.00304	.676
17	.395	16.612	136.63	29.96	.00407	.699
18	.595	16.644	206.24	29.96	.00613	.646
19	.795	16.669	276.13	29.94	.00820	.692
20	1.195	16.743	416.80	29.95	.01232	.629

FILE: UP0729S2C

Station 2 (downwash)

XSTA = .356 [m]
Cf = 4.600E-3
Upw = 17.24 [m/S]
Visc = 1.631E-5 [m^2/S]
REx = 3.760E+5
Del995 = 2.559E-3 [m]

DEL1 = 3.166E-4 [m]
DEL2 = 1.635E-4 [m]
H = 1.937
REdel1 = 3.349E+2
REdel2 = 1.729E+2

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.005	2.528	2.28	3.06	.00005	1.383
2	.007	2.654	3.30	3.21	.00007	1.242
3	.009	3.474	4.31	4.20	.00009	1.797
4	.011	4.192	5.33	5.07	.00011	2.343
5	.013	5.073	6.34	6.13	.00013	2.748
6	.016	6.292	7.86	7.61	.00016	3.383
7	.020	7.892	9.89	9.54	.00020	3.920
8	.025	9.618	12.43	11.63	.00025	4.692
9	.030	11.076	14.97	13.39	.00030	4.778
10	.035	12.381	17.50	14.97	.00036	5.005
11	.040	13.382	20.04	16.18	.00041	4.922
12	.045	14.101	22.58	17.04	.00046	4.412
13	.050	14.611	25.12	17.66	.00051	3.875
14	.060	15.342	30.20	18.54	.00061	3.105
15	.070	15.775	35.27	19.06	.00072	3.398
16	.089	16.247	45.43	19.63	.00092	3.405
17	.109	16.466	55.60	19.89	.00113	3.406
18	.160	16.715	81.03	20.18	.00164	4.693
19	.210	16.987	106.48	20.50	.00216	3.998
20	.260	17.219	131.97	20.77	.00268	2.282
21	.310	17.339	157.47	20.90	.00319	.846
22	.410	17.346	208.57	20.89	.00422	.642
23	.510	17.375	259.77	20.90	.00525	.650
24	.710	17.389	362.49	20.87	.00731	.620
25	1.010	17.405	517.38	20.83	.01041	.660

FILE: UP072952T

Station 2 (upwash)

XSTA = .356 [m]
Cf = 2.100E-3
Upw = 17.23 [m/S]
Visc = 1.631E-5 [m^2/S]
REx = 3.757E+5
Del995 = 3.007E-3 [m]

DEL1 = 1.160E-3 [m]
DEL2 = 5.310E-4 [m]
H = 2.185
REdel1 = 1.226E+3
REdel2 = 5.610E+2

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.015	2.669	5.14	4.78	.00015	4.762
2	.017	3.091	5.82	5.53	.00018	5.694
3	.019	3.458	6.51	6.19	.00020	6.451
4	.021	3.839	7.19	6.88	.00022	7.213
5	.025	4.571	8.56	8.18	.00026	8.444
6	.030	5.398	10.28	9.66	.00031	10.179
7	.040	6.750	13.70	12.09	.00041	12.296
8	.050	7.726	17.13	13.83	.00052	13.428
9	.060	8.564	20.56	15.33	.00062	14.193
10	.075	9.190	25.70	16.45	.00077	13.883
11	.085	9.236	29.13	16.53	.00088	13.276
12	.095	9.218	32.56	16.49	.00098	12.334
13	.105	9.144	35.99	16.36	.00108	11.898
14	.115	8.978	39.43	16.06	.00119	10.872
15	.130	8.695	44.57	15.55	.00134	9.917
16	.145	8.751	49.73	15.65	.00149	9.696
17	.165	9.366	56.60	16.75	.00170	10.911
18	.185	10.764	63.47	19.24	.00191	12.351
19	.205	12.659	70.35	22.63	.00211	11.953
20	.225	14.424	77.22	25.77	.00232	10.382
21	.245	15.907	84.11	28.42	.00253	6.503
22	.265	16.728	90.99	29.88	.00273	3.521
23	.285	17.073	97.88	30.49	.00294	1.857
24	.305	17.229	104.77	30.76	.00314	1.001
25	.335	17.311	115.11	30.90	.00345	.619
26	.365	17.304	125.46	30.88	.00376	.735
27	.395	17.323	135.81	30.90	.00407	.678
28	.445	17.320	153.08	30.88	.00459	.679
29	.515	17.319	177.29	30.86	.00531	.672
30	.715	17.364	246.65	30.87	.00737	.595

FILE: UP072953C

Station 3 (downwash)

XSTA = .610 [m]
Cf = 4.800E-3
Upw = 17.08 [m/S]
Visc = 1.630E-5 [m^2/S]
REx = 6.389E+5
Del99S = 1.007E-2 [m]

DEL1 = 1.407E-3 [m]
DEL2 = 9.959E-4 [m]
H = 1.413
REdel1 = 1.475E+3
REdel2 = 1.044E+3

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	0.000	2.206	0.00	2.64	0.00000	3.090
2	.001	2.300	.51	2.75	.00001	3.224
3	.003	2.328	1.54	2.78	.00003	3.172
4	.005	2.415	2.57	2.89	.00005	3.207
5	.007	2.751	3.59	3.29	.00007	4.010
6	.009	3.513	4.62	4.20	.00009	5.576
7	.011	4.153	5.65	4.96	.00011	6.466
8	.014	5.055	7.19	6.04	.00014	7.951
9	.018	6.248	9.24	7.47	.00019	9.271
10	.023	7.447	11.81	8.90	.00024	10.134
11	.028	8.279	14.38	9.89	.00029	10.482
12	.038	9.560	19.52	11.42	.00039	10.093
13	.048	10.301	24.66	12.30	.00049	9.922
14	.063	10.984	32.37	13.12	.00065	9.152
15	.098	11.840	50.37	14.14	.00101	8.228
16	.148	12.593	76.11	15.03	.00153	7.684
17	.198	13.129	101.88	15.66	.00204	7.344
18	.298	13.994	153.49	16.67	.00307	6.899
19	.498	15.375	257.03	18.28	.00513	5.570
20	.648	16.213	334.97	19.25	.00668	4.408
21	.848	16.961	439.27	20.09	.00874	2.362
22	1.048	17.236	544.01	20.38	.01080	1.035
23	1.248	17.333	649.18	20.45	.01287	.707
24	1.448	17.384	754.79	20.47	.01493	.653
25	1.648	17.406	860.85	20.45	.01699	.654
26	1.948	17.467	1020.76	20.46	.02008	.631
27	2.248	17.481	1181.70	20.41	.02318	.677
28	2.748	17.583	1452.19	20.42	.02833	.609

FILE: UP0729S3T

Station 3 (upwash)

XSTA = .610 [m]
Cf = 4.150E-3
Upw = 17.11 [m/S]
Visc = 1.629E-5 [m^2/S]
REx = 6.403E+5
Del995 = 1.019E-2 [m]

DEL1 = 1.623E-3 [m]
DEL2 = 1.124E-3 [m]
H = 1.444
REdel1 = 1.705E+3
REdel2 = 1.181E+3

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.008	3.047	3.59	3.91	.00008	4.800
2	.009	3.533	4.55	4.53	.00010	5.565
3	.012	4.046	5.50	5.19	.00012	6.548
4	.013	4.586	6.46	5.88	.00014	7.519
5	.017	5.725	8.38	7.34	.00018	8.762
6	.022	6.830	10.77	8.76	.00023	9.605
7	.028	7.681	13.16	9.85	.00028	9.886
8	.032	8.294	15.56	10.64	.00034	9.768
9	.042	9.195	20.35	11.79	.00044	9.479
10	.057	10.091	27.53	12.94	.00059	8.987
11	.072	10.659	34.72	13.67	.00075	8.285
12	.092	11.150	44.31	14.29	.00095	7.879
13	.142	11.960	68.29	15.32	.00147	7.165
14	.242	13.021	116.33	16.67	.00250	6.680
15	.342	13.871	164.48	17.74	.00353	6.383
16	.492	15.010	236.88	19.16	.00508	5.737
17	.642	15.991	309.51	20.38	.00662	4.664
18	.842	16.901	406.69	21.50	.00869	2.622
19	1.042	17.248	504.29	21.89	.01075	1.029
20	1.242	17.316	602.29	21.93	.01281	.703
21	1.442	17.367	700.70	21.95	.01487	.607
22	1.743	17.416	849.09	21.95	.01796	.634
23	2.242	17.517	1098.50	21.96	.02312	.637

FILE: UP0729S4C

Station 4 (downwash)

XSTA = .876 [m]
Cf = 5.200E-3
Upw = 17.14 [m/S]
Visc = 1.624E-5 [m^2/S]
REx = 9.244E+5
Del99S = 1.445E-2 [m]

DEL1 = 1.532E-3 [m]
DEL2 = 1.167E-3 [m]
H = 1.313
REdel1 = 1.616E+3
REdel2 = 1.231E+3

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	0.000	2.282	0.00	2.61	0.00000	2.840
2	.003	2.404	1.61	2.75	.00003	3.027
3	.006	3.263	3.23	3.73	.00006	4.907
4	.009	4.168	4.84	4.77	.00009	6.259
5	.012	5.267	6.46	6.03	.00012	7.905
6	.015	6.071	8.07	6.95	.00015	8.858
7	.025	8.458	13.45	9.68	.00026	10.538
8	.035	10.003	18.83	11.44	.00036	10.804
9	.045	10.871	24.22	12.44	.00046	10.373
10	.065	11.893	34.99	13.60	.00067	9.488
11	.095	12.668	51.15	14.48	.00098	8.484
12	.145	13.342	78.11	15.25	.00149	7.867
13	.195	13.779	105.10	15.74	.00201	7.499
14	.295	14.371	159.17	16.40	.00304	6.896
15	.445	14.976	240.47	17.06	.00459	6.416
16	.695	15.765	376.54	17.91	.00716	5.582
17	.895	16.312	485.91	18.50	.00923	4.859
18	1.095	16.840	595.73	19.06	.01129	3.921
19	1.295	17.171	706.01	19.39	.01335	2.815
20	1.545	17.430	844.51	19.63	.01593	1.447
21	1.795	17.549	983.74	19.71	.01851	.867
22	2.045	17.582	1123.70	19.70	.02108	.723
23	2.295	17.621	1264.40	19.69	.02366	.698
24	2.545	17.630	1405.85	19.65	.02624	.644
25	2.795	17.687	1548.04	19.66	.02881	.630
26	3.295	17.751	1834.71	19.63	.03397	.625
27	3.795	17.834	2124.46	19.61	.03912	.668
28	4.295	17.928	2417.33	19.61	.04428	.621

FILE: UP0729S4T

Station 4 (upwash)

XSTA = .876 [m]
Cf = 4.200E-3
Upw = 17.13 [m/S]
Visc = 1.626E-5 [m^2/S]
REx = 9.234E+5
Del99S = 1.603E-2 [m]

DEL1 = 2.487E-3 [m]
DEL2 = 1.820E-3 [m]
H = 1.367
REdel1 = 2.620E+3
REdel2 = 1.917E+3

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.007	2.620	3.38	3.34	.00007	4.113
2	.009	3.278	4.35	4.17	.00009	5.257
3	.011	3.775	5.31	4.81	.00011	6.298
4	.013	4.487	6.28	5.71	.00013	7.236
5	.016	5.136	7.73	6.54	.00016	8.321
6	.021	6.412	10.14	8.17	.00022	9.745
7	.026	7.304	12.56	9.30	.00027	10.118
8	.036	8.572	17.39	10.91	.00037	10.215
9	.046	9.432	22.22	12.01	.00047	10.203
10	.061	10.239	29.48	13.03	.00063	9.543
11	.076	10.696	36.73	13.61	.00078	9.079
12	.106	11.343	51.24	14.43	.00109	8.529
13	.156	11.913	75.46	15.15	.00161	7.915
14	.206	12.341	99.69	15.68	.00212	7.668
15	.306	12.905	148.24	16.39	.00315	7.260
16	.456	13.614	221.25	17.26	.00470	7.065
17	.606	14.232	294.49	18.01	.00625	6.867
18	.806	15.006	392.49	18.95	.00831	6.677
19	1.006	15.767	490.90	19.87	.01037	5.918
20	1.206	16.507	589.73	20.76	.01243	4.914
21	1.406	17.044	688.96	21.39	.01449	3.454
22	1.606	17.337	788.62	21.72	.01656	1.954
23	1.806	17.472	888.69	21.84	.01862	1.036
24	2.056	17.502	1014.37	21.82	.02120	.801
25	2.306	17.555	1140.72	21.83	.02377	.687
26	2.556	17.604	1267.74	21.83	.02635	.649
27	2.806	17.633	1395.42	21.81	.02893	.638

FILE: UP0729SSC

Station 5 (downwash)

XSTA = 1.130 [m]
Cf = 4.700E-3
Upw = 16.76 [m/S]
Visc = 1.628E-5 [m^2/S]
REx = 1.164E+6
Del995 = 2.173E-2 [m]

DEL1 = 2.436E-3 [m]
DEL2 = 1.898E-3 [m]
H = 1.284
REdel1 = 2.509E+3
REdel2 = 1.954E+3

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.003	2.101	1.50	2.59	.00003	2.644
2	.005	2.268	2.50	2.79	.00005	3.217
3	.007	2.907	3.49	3.58	.00007	4.737
4	.010	3.811	4.99	4.69	.00010	6.387
5	.013	4.703	6.49	5.79	.00013	7.779
6	.018	6.160	8.99	7.58	.00019	9.519
7	.023	7.248	11.48	8.92	.00024	10.320
8	.033	8.743	16.48	10.76	.00034	10.895
9	.043	9.668	21.48	11.89	.00044	10.772
10	.058	10.566	28.97	13.00	.00060	10.246
11	.078	11.257	38.97	13.84	.00080	9.457
12	.098	11.709	48.97	14.40	.00101	9.303
13	.148	12.335	74.00	15.16	.00153	8.630
14	.198	12.774	99.05	15.69	.00204	8.268
15	.298	13.379	149.23	16.41	.00307	7.893
16	.448	13.979	224.69	17.12	.00462	7.440
17	.648	14.501	325.67	17.73	.00668	6.847
18	.848	14.955	427.07	18.24	.00874	6.403
19	1.098	15.484	554.42	18.84	.01132	5.687
20	1.398	16.090	708.11	19.52	.01441	4.902
21	1.698	16.586	862.77	20.05	.01751	3.894
22	1.998	16.973	1018.41	20.46	.02060	2.690
23	2.298	17.161	1175.04	20.62	.02369	1.501
24	2.598	17.240	1332.66	20.65	.02678	1.037
25	2.898	17.326	1491.29	20.69	.02988	.761
26	3.198	17.343	1650.93	20.64	.03297	.724
27	3.598	17.411	1865.38	20.63	.03709	.653
28	4.098	17.496	2136.03	20.62	.04225	.599

FILE: UP0729S5T

Station 5 (upwash)

XSTA = 1.130 [m]
Cf = 3.700E-3
Upw = 16.76 [m/S]
Visc = 1.627E-5 [m^2/S]
REx = 1.165E+6
Del99S = 2.390E-2 [m]

DEL1 = 3.679E-3 [m]
DEL2 = 2.718E-3 [m]
H = 1.353
REdel1 = 3.791E+3
REdel2 = 2.801E+3

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.008	2.581	3.55	3.58	.00008	4.349
2	.010	3.156	4.43	4.38	.00010	5.462
3	.012	3.652	5.32	5.06	.00012	6.343
4	.014	4.150	6.21	5.75	.00014	7.352
5	.016	4.624	7.09	6.41	.00016	7.868
6	.021	5.694	9.31	7.89	.00022	9.333
7	.026	6.570	11.53	9.11	.00027	9.767
8	.036	7.895	15.96	10.94	.00037	10.216
9	.046	8.547	20.40	11.85	.00047	9.925
10	.066	9.479	29.27	13.14	.00068	9.374
11	.086	10.028	38.15	13.90	.00089	8.906
12	.096	10.216	42.59	14.15	.00099	8.662
13	.121	10.595	53.70	14.67	.00125	8.267
14	.171	11.177	75.93	15.47	.00176	7.994
15	.246	11.691	109.32	16.17	.00254	7.833
16	.346	12.197	153.92	16.85	.00357	7.583
17	.496	12.734	220.98	17.57	.00511	7.323
18	.696	13.363	310.74	18.40	.00718	7.026
19	.996	14.141	446.07	19.41	.01027	6.842
20	1.296	15.031	582.24	20.57	.01336	6.461
21	1.596	15.779	719.28	21.52	.01645	5.938
22	1.896	16.475	857.17	22.40	.01955	4.772
23	2.196	16.969	995.94	23.00	.02264	3.016
24	2.496	17.202	1135.59	23.24	.02573	1.564
25	2.796	17.290	1276.14	23.29	.02882	.977
26	3.096	17.345	1417.57	23.29	.03192	.766
27	3.596	17.408	1655.33	23.25	.03707	.618
28	4.096	17.502	1895.63	23.25	.04223	.670

FILE: T0829S3C

Station 3 (downwash)

Xsta	= .610 [m]	Del-ther	= 9.841E-3 [m]
Tw	= 32.62 [C]	Del-enth	= 1.034E-3 [m]
Tinf	= 28.67 [C]	Del-cond	= 6.314E-4 [m]
Qw	= 1.478E+2 [W/m^2]	Re-enth	= 1.081E+3
Yeff	= +1.700E-4 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 71.73 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.017	0.000	0.00	0.00	0.000	0.000
2	+.019	31.598	9.67	6.62	.019	.289
3	+.021	31.465	10.69	7.48	.021	.327
4	+.023	31.383	11.72	8.02	.023	.350
5	+.025	31.269	12.75	8.76	.025	.382
6	+.027	31.171	13.77	9.40	.027	.410
7	+.029	31.112	14.80	9.79	.029	.427
8	+.034	30.936	17.37	10.94	.035	.477
9	+.039	30.819	19.94	11.70	.040	.510
10	+.049	30.601	25.08	13.13	.050	.572
11	+.059	30.488	30.23	13.87	.060	.604
12	+.069	30.395	35.37	14.48	.070	.630
13	+.089	30.280	45.67	15.24	.090	.663
14	+.109	30.184	55.97	15.87	.111	.690
15	+.129	30.124	66.28	16.27	.131	.707
16	+.169	30.014	86.93	17.00	.172	.738
17	+.219	29.914	112.77	17.66	.223	.766
18	+.269	29.826	138.67	18.25	.273	.791
19	+.369	29.647	190.63	19.46	.375	.842
20	+.469	29.523	242.74	20.30	.477	.877
21	+.569	29.393	295.04	21.18	.578	.914
22	+.669	29.269	347.54	22.03	.680	.949
23	+.869	29.131	452.81	23.00	.883	.988
24	+1.069	29.088	558.42	23.34	1.086	1.000
25	+1.369	29.080	717.59	23.47	1.391	1.002
26	+1.669	29.083	877.80	23.53	1.696	1.002
27	+1.969	29.094	1039.04	23.54	2.001	.998

FILE: T0829S3T

Station 3 (upwash)

Xsta	= .610 [m]	Del-ther	= 1.193E-2 [m]
Tw	= 32.95 [C]	Del-enth	= 1.445E-3 [m]
Tinf	= 28.72 [C]	Del-cond	= 7.079E-4 [m]
Qw	= 1.479E+2 [W/m^2]	Re-enth	= 1.512E+3
Yeff	= +1.200E-4 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 112.51 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.016	31.963	7.57	5.94	.013	.249
2	+.018	31.920	8.52	6.20	.015	.260
3	+.020	31.842	9.47	6.67	.017	.279
4	+.022	31.764	10.42	7.14	.018	.299
5	+.024	31.658	11.38	7.79	.020	.326
6	+.029	31.424	13.76	9.20	.024	.385
7	+.034	31.268	16.15	10.15	.028	.424
8	+.044	31.022	20.94	11.65	.037	.487
9	+.054	30.855	25.72	12.67	.045	.529
10	+.064	30.751	30.51	13.30	.054	.555
11	+.084	30.604	40.08	14.20	.070	.592
12	+.104	30.497	49.67	14.86	.087	.619
13	+.134	30.368	64.07	15.65	.112	.652
14	+.174	30.254	83.28	16.36	.146	.680
15	+.224	30.119	107.36	17.20	.188	.715
16	+.324	29.927	155.64	18.39	.271	.763
17	+.424	29.750	204.11	19.51	.355	.808
18	+.524	29.599	252.75	20.46	.439	.846
19	+.674	29.393	326.04	21.77	.565	.898
20	+.874	29.160	424.32	23.26	.732	.957
21	+1.074	29.033	522.97	24.11	.900	.989
22	+1.274	28.992	621.91	24.42	1.068	.999
23	+1.574	28.994	770.96	24.48	1.319	.999
24	+1.974	28.989	971.30	24.63	1.654	1.000
25	+2.474	28.989	1224.28	24.77	2.073	1.000

FILE: T0829S4C

Station 4 (downwash)

Xsta = .876 [m]
Tw = 32.49 [C]
Tinf = 28.61 [C]
Qw = 1.483E+2 [W/m^2]
Yeff = +1.400E-4 [m]
Cond = 13.20

Del-ther = 1.736E-2 [m]
Del-enth = 2.009E-3 [m]
Del-cond = 6.404E-4 [m]
Re-enth = 2.109E+3
Prt = .950
Qadded = 142.35 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.016	31.546	8.49	6.34	.009	.262
2	+.018	31.510	9.56	6.59	.010	.272
3	+.020	31.436	10.62	7.09	.012	.292
4	+.022	31.328	11.69	7.82	.013	.323
5	+.024	31.224	12.76	8.53	.014	.352
6	+.026	31.141	13.83	9.09	.015	.375
7	+.031	30.952	16.51	10.37	.018	.427
8	+.036	30.800	19.19	11.40	.021	.470
9	+.046	30.585	24.56	12.86	.026	.529
10	+.056	30.455	29.92	13.75	.032	.566
11	+.066	30.358	35.29	14.41	.038	.593
12	+.086	30.221	46.03	15.35	.050	.631
13	+.106	30.128	56.78	15.99	.061	.656
14	+.136	30.033	72.92	16.64	.078	.683
15	+.186	29.927	99.84	17.37	.107	.712
16	+.286	29.782	153.82	18.39	.165	.753
17	+.386	29.686	207.95	19.07	.222	.780
18	+.586	29.517	316.71	20.28	.337	.827
19	+.786	29.362	426.14	21.39	.453	.870
20	+.986	29.216	536.23	22.45	.568	.910
21	+1.186	29.096	646.91	23.34	.683	.944
22	+1.486	28.960	813.94	24.37	.856	.982
23	+1.786	28.902	981.92	24.85	1.029	.998
24	+2.086	28.899	1150.79	24.96	1.201	.998
25	+2.386	28.894	1320.83	25.08	1.374	1.000
26	+2.886	28.893	1606.80	25.23	1.662	1.000

FILE: T0829S4T

Station 4 (upwash)

Xsta	= .876 [m]	Del-ther	= 1.868E-2 [m]
Tw	= 32.74 [C]	Del-enth	= 2.341E-3 [m]
Tinf	= 28.54 [C]	Del-cond	= 6.920E-4 [m]
Qw	= 1.484E+2 [W/m^2]	Re-enth	= 2.455E+3
Yeff	= +1.100E-4 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 179.12 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.017	31.722	8.11	6.17	.009	.262
2	+.019	31.669	9.07	6.49	.010	.276
3	+.021	31.581	10.03	7.02	.011	.298
4	+.024	31.453	11.47	7.80	.013	.332
5	+.028	31.320	13.39	8.61	.015	.366
6	+.033	31.176	15.79	9.49	.018	.403
7	+.043	30.977	20.61	10.71	.023	.454
8	+.053	30.809	25.42	11.74	.028	.497
9	+.063	30.702	30.24	12.39	.034	.525
10	+.083	30.560	39.89	13.26	.044	.561
11	+.108	30.454	51.95	13.91	.058	.589
12	+.138	30.355	66.44	14.53	.074	.614
13	+.188	30.232	90.62	15.29	.101	.646
14	+.288	30.051	139.13	16.42	.154	.692
15	+.388	29.923	187.79	17.23	.208	.725
16	+.488	29.811	236.60	17.94	.261	.754
17	+.688	29.614	334.70	19.20	.368	.805
18	+.888	29.431	433.44	20.39	.475	.852
19	+1.088	29.255	532.80	21.53	.582	.897
20	+1.288	29.091	632.77	22.61	.690	.940
21	+1.488	28.964	733.22	23.46	.797	.972
22	+1.688	28.891	834.01	23.97	.904	.991
23	+1.988	28.866	985.73	24.21	1.064	.998
24	+2.288	28.859	1138.40	24.33	1.225	.999
25	+2.788	28.854	1395.18	24.51	1.493	1.001

FILE: T0829S5C

Station 5 (downwash)

Xsta	= 1.130 [m]	Del-ther	= 2.802E-2 [m]
Tw	= 32.77 [C]	Del-enth	= 2.788E-3 [m]
Tinf	= 28.62 [C]	Del-cond	= 7.036E-4 [m]
Qw	= 1.466E+2 [W/m^2]	Re-enth	= 2.860E+3
Yeff	= +1.200E-4 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 209.75 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.016	31.775	7.89	6.30	.006	.255
2	+.018	31.740	8.88	6.53	.006	.264
3	+.020	31.674	9.87	6.95	.007	.281
4	+.022	31.621	10.86	7.29	.008	.295
5	+.024	31.574	11.85	7.58	.009	.307
6	+.029	31.391	14.33	8.75	.010	.353
7	+.034	31.200	16.82	9.97	.012	.403
8	+.039	31.026	19.32	11.08	.014	.447
9	+.044	30.904	21.81	11.86	.016	.478
10	+.054	30.713	26.80	13.08	.019	.527
11	+.064	30.600	31.79	13.81	.023	.556
12	+.079	30.470	39.27	14.64	.028	.589
13	+.099	30.351	49.26	15.41	.035	.620
14	+.119	30.262	59.25	15.98	.042	.643
15	+.149	30.145	74.27	16.74	.053	.673
16	+.179	30.086	89.28	17.13	.064	.688
17	+.229	29.990	114.35	17.75	.082	.712
18	+.279	29.931	139.44	18.14	.100	.728
19	+.379	29.827	189.74	18.83	.135	.754
20	+.529	29.694	265.49	19.73	.189	.788
21	+.729	29.568	366.95	20.59	.260	.820
22	+.929	29.453	468.98	21.38	.332	.850
23	+1.129	29.345	571.59	22.14	.403	.878
24	+1.429	29.191	726.58	23.22	.510	.917
25	+1.729	29.070	882.73	24.10	.617	.948
26	+2.029	28.970	1040.03	24.84	.724	.974
27	+2.329	28.917	1198.26	25.28	.831	.987
28	+2.629	28.896	1357.42	25.51	.938	.993
29	+2.929	28.881	1517.67	25.70	1.045	.997
30	+3.229	28.884	1678.87	25.77	1.152	.996
31	+3.729	28.873	1950.20	25.99	1.331	.999
32	+4.229	28.867	2224.66	26.18	1.509	1.000
33	+4.729	28.868	2502.25	26.33	1.688	1.000

FILE: T0829SST

Station 5 (upwash)

Xsta	= 0.000 [m]	Del-ther	= 2.693E-2 [m]
Tw	= 32.80 [C]	Del-enth	= 3.222E-3 [m]
Tinf	= 28.49 [C]	Del-cond	= 7.121E-4 [m]
Qw	= 1.470E+2 [W/m^2]	Re-enth	= 3.305E+3
Yeff	= +1.000E-4 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 245.99 [W/m]

	Y [cm]	T [C]	Y+	T+	Y/Del995	DT/DTw
1	+.018	31.741	7.88	5.91	.007	.266
2	+.020	31.697	8.75	6.16	.007	.278
3	+.025	31.484	10.96	7.36	.009	.331
4	+.030	31.331	13.16	8.23	.011	.370
5	+.035	31.223	15.36	8.83	.013	.397
6	+.040	31.128	17.57	9.37	.015	.421
7	+.050	30.948	21.99	10.39	.019	.467
8	+.060	30.839	26.41	11.01	.022	.494
9	+.080	30.664	35.25	12.00	.030	.538
10	+.100	30.574	44.10	12.51	.037	.561
11	+.130	30.452	57.39	13.21	.048	.592
12	+.170	30.356	75.12	13.76	.063	.616
13	+.210	30.293	92.87	14.13	.078	.632
14	+.290	30.165	128.46	14.87	.108	.664
15	+.390	30.036	173.07	15.62	.145	.697
16	+.490	29.936	217.82	16.21	.182	.722
17	+.690	29.770	307.71	17.20	.256	.764
18	+.890	29.637	398.10	18.00	.331	.798
19	+1.190	29.441	534.70	19.20	.442	.847
20	+1.490	29.250	672.52	20.37	.553	.895
21	+1.790	29.099	811.39	21.32	.665	.933
22	+2.190	28.928	998.22	22.42	.813	.976
23	+2.590	28.859	1186.43	22.93	.962	.994
24	+2.990	28.844	1376.08	23.12	1.110	.998
25	+3.390	28.836	1567.46	23.28	1.259	1.000
26	+3.890	28.839	1809.06	23.40	1.445	.999
27	+4.790	28.832	2251.23	23.69	1.779	1.001

FILENAME: ST0831

Uinf: 17.20 [m/s]
HEAT FLUX TO HEATER: 171.3 [W/m^2]
HEAT LOSS THROUGH BACK WALL OVER DA: .073 [W]
FREESTREAM TEMPERATURE: 28.07 [C]

	Twall [C]	REx	Enth [m]	Qconv [W/m^2]	St
1	30.08	+4.000E+4	+2.951E-6	+1.485E+2	+3.752E-3
2	30.96	+6.650E+4	+7.286E-5	+1.526E+2	+2.694E-3
3	31.91	+9.285E+4	+1.094E-4	+1.473E+2	+1.961E-3
4	32.86	+1.190E+5	+1.401E-4	+1.418E+2	+1.515E-3
5	32.94	+1.455E+5	+1.682E-4	+1.417E+2	+1.488E-3
6	33.49	+1.716E+5	+1.914E-4	+1.383E+2	+1.306E-3
7	33.68	+1.979E+5	+2.170E-4	+1.373E+2	+1.254E-3
8	33.87	+2.242E+5	+2.388E-4	+1.363E+2	+1.204E-3
9	34.16	+2.504E+5	+2.564E-4	+1.346E+2	+1.133E-3
10	34.47	+2.765E+5	+2.872E-4	+1.326E+2	+1.063E-3
11	34.02	+3.032E+5	+3.386E-4	+1.354E+2	+1.165E-3
12	33.59	+3.300E+5	+3.990E-4	+1.379E+2	+1.279E-3
13	33.14	+3.568E+5	+4.613E-4	+1.405E+2	+1.417E-3
14	32.93	+3.835E+5	+5.201E-4	+1.416E+2	+1.492E-3
15	32.71	+4.102E+5	+6.118E-4	+1.427E+2	+1.573E-3
16	32.06	+4.375E+5	+7.444E-4	+1.466E+2	+1.876E-3
17	31.66	+4.646E+5	+8.546E-4	+1.488E+2	+2.113E-3
18	31.53	+4.913E+5	+9.062E-4	+1.496E+2	+2.209E-3
19	31.69	+5.176E+5	+9.320E-4	+1.485E+2	+2.095E-3
20	31.75	+5.441E+5	+9.773E-4	+1.482E+2	+2.054E-3
21	31.75	+5.706E+5	+1.039E-3	+1.482E+2	+2.059E-3
22	31.69	+5.973E+5	+1.081E-3	+1.486E+2	+2.097E-3
23	31.82	+6.236E+5	+1.100E-3	+1.478E+2	+2.014E-3
24	31.92	+6.499E+5	+1.150E-3	+1.472E+2	+1.955E-3
25	31.82	+6.766E+5	+1.242E-3	+1.478E+2	+2.013E-3
26	31.66	+7.035E+5	+1.332E-3	+1.488E+2	+2.118E-3
27	31.61	+7.301E+5	+1.383E-3	+1.491E+2	+2.151E-3
28	31.67	+7.566E+5	+1.378E-3	+1.487E+2	+2.107E-3
29	31.92	+7.825E+5	+1.391E-3	+1.472E+2	+1.955E-3
30	31.89	+8.091E+5	+1.451E-3	+1.474E+2	+1.970E-3
31	31.86	+8.357E+5	+1.538E-3	+1.476E+2	+1.989E-3
32	31.70	+8.627E+5	+1.620E-3	+1.485E+2	+2.066E-3
33	31.72	+8.892E+5	+1.640E-3	+1.484E+2	+2.075E-3
34	31.85	+9.154E+5	+1.683E-3	+1.476E+2	+1.993E-3
35	31.76	+9.421E+5	+1.755E-3	+1.482E+2	+2.049E-3
36	31.76	+9.687E+5	+1.775E-3	+1.482E+2	+2.050E-3
37	31.89	+9.948E+5	+1.764E-3	+1.474E+2	+1.968E-3
38	32.03	+1.021E+6	+1.804E-3	+1.466E+2	+1.891E-3

39	31.94	+1.048E+6	+1.897E-3	+1.472E+2	+1.944E-3
40	31.84	+1.075E+6	+1.965E-3	+1.477E+2	+2.000E-3
41	31.87	+1.101E+6	+2.009E-3	+1.476E+2	+1.984E-3
42	31.87	+1.128E+6	+2.010E-3	+1.476E+2	+1.966E-3
43	32.05	+1.153E+6	+2.020E-3	+1.465E+2	+1.878E-3
44	32.02	+1.180E+6	+2.085E-3	+1.467E+2	+1.897E-3
45	31.99	+1.207E+6	+2.207E-3	+1.468E+2	+1.913E-3
46	31.75	+1.234E+6	+2.295E-3	+1.483E+2	+2.056E-3
47	31.87	+1.260E+6	+2.275E-3	+1.476E+2	+1.985E-3
48	31.99	+1.286E+6	+2.282E-3	+1.469E+2	+1.914E-3
49	32.01	+1.313E+6	+2.333E-3	+1.467E+2	+1.901E-3
50	31.98	+1.339E+6	+2.421E-3	+1.469E+2	+1.919E-3
51	31.88	+1.366E+6	+2.491E-3	+1.475E+2	+1.976E-3
52	31.92	+1.393E+6	+2.573E-3	+1.473E+2	+1.955E-3

**********CROSS-SPAN DATA**********

61	31.74	---------	------	+1.483E+2	+2.064E-3
62	32.43	---------	------	+1.444E+2	+1.691E-3
63	3.99	---------	------	+2.835E+2	-5.741E-4
64	32.61	---------	------	+1.434E+2	+1.614E-3
65	32.34	---------	------	+1.449E+2	+1.736E-3
66	-2.64	---------	------	+3.104E+2	-4.872E-4
67	33.07	---------	------	+1.408E+2	+1.440E-3
68	32.86	---------	------	+1.420E+2	+1.515E-3
69	32.09	---------	------	+1.464E+2	+1.862E-3
70	31.83	---------	------	+1.478E+2	+2.009E-3

**********CROSS-SPAN DATA**********

71	33.18	---------	------	+1.402E+2	+1.402E-3
72	33.62	---------	------	+1.377E+2	+1.270E-3
73	33.85	---------	------	+1.363E+2	+1.208E-3
74	34.36	---------	------	+1.334E+2	+1.088E-3
75	33.96	---------	------	+1.357E+2	+1.181E-3
76	33.80	---------	------	+1.366E+2	+1.220E-3
77	34.12	---------	------	+1.348E+2	+1.142E-3
78	34.52	---------	------	+1.325E+2	+1.054E-3
79	38.03	---------	------	+1.120E+2	+5.802E-4
80	33.54	---------	------	+1.381E+2	+1.293E-3
81	33.37	---------	------	+1.391E+2	+1.343E-3
82	33.50	---------	------	+1.384E+2	+1.305E-3
83	33.47	---------	------	+1.385E+2	+1.312E-3
84	32.67	---------	------	+1.431E+2	+1.591E-3
85	33.76	---------	------	+1.369E+2	+1.231E-3
86	33.17	---------	------	+1.402E+2	+1.406E-3

**********CROSS-SPAN DATA**********

87	31.35	---------	------	+1.505E+2	+2.341E-3
88	31.56	---------	------	+1.493E+2	+2.184E-3
89	31.60	---------	------	+1.491E+2	+2.155E-3
90	31.68	---------	------	+1.486E+2	+2.101E-3

91	31.69	---------	------	+1.486E+2	+2.096E-3
92	31.78	---------	------	+1.481E+2	+2.039E-3
93	31.68	---------	------	+1.486E+2	+2.101E-3
94	31.62	---------	------	+1.490E+2	+2.144E-3
95	31.61	---------	------	+1.490E+2	+2.150E-3
96	31.69	---------	------	+1.486E+2	+2.096E-3
97	31.70	---------	------	+1.485E+2	+2.090E-3
98	31.58	---------	------	+1.492E+2	+2.172E-3
99	4.30	---------	------	+2.823E+2	-5.791E-4
100	31.57	---------	------	+1.493E+2	+2.178E-3
101	31.44	---------	------	+1.500E+2	+2.272E-3
102	31.49	---------	------	+1.497E+2	+2.236E-3

**********CROSS-SPAN DATA**********

103	31.59	---------	------	+1.491E+2	+2.161E-3
104	32.02	---------	------	+1.467E+2	+1.897E-3
105	32.30	---------	------	+1.451E+2	+1.751E-3
106	32.13	---------	------	+1.461E+2	+1.840E-3
107	32.16	---------	------	+1.459E+2	+1.824E-3
108	32.02	---------	------	+1.467E+2	+1.897E-3
109	31.97	---------	------	+1.470E+2	+1.924E-3
110	31.89	---------	------	+1.474E+2	+1.970E-3
111	32.02	---------	------	+1.467E+2	+1.897E-3
112	32.07	---------	------	+1.464E+2	+1.870E-3
113	32.00	---------	------	+1.468E+2	+1.906E-3
114	31.96	---------	------	+1.471E+2	+1.933E-3
115	31.87	---------	------	+1.476E+2	+1.984E-3
116	31.79	---------	------	+1.480E+2	+2.029E-3
117	31.73	---------	------	+1.483E+2	+2.059E-3
118	31.77	---------	------	+1.481E+2	+2.044E-3

**********CROSS-SPAN DATA**********

119	31.81	---------	------	+1.479E+2	+2.019E-3
120	32.26	---------	------	+1.454E+2	+1.775E-3
121	32.22	---------	------	+1.456E+2	+1.791E-3
122	32.09	---------	------	+1.464E+2	+1.862E-3
123	32.05	---------	------	+1.465E+2	+1.879E-3
124	32.15	---------	------	+1.460E+2	+1.828E-3
125	31.97	---------	------	+1.470E+2	+1.924E-3
126	32.04	---------	------	+1.466E+2	+1.883E-3
127	31.75	---------	------	+1.483E+2	+2.059E-3
128	31.75	---------	------	+1.483E+2	+2.059E-3

**********CROSS-SPAN DATA**********

129	31.71	---------	------	+1.484E+2	+2.080E-3
130	32.15	---------	------	+1.460E+2	+1.828E-3
131	32.44	---------	------	+1.444E+2	+1.688E-3
132	32.28	---------	------	+1.453E+2	+1.763E-3
133	32.12	---------	------	+1.462E+2	+1.845E-3
134	32.13	---------	------	+1.461E+2	+1.836E-3
135	32.13	---------	------	+1.461E+2	+1.836E-3
136	32.13	---------	------	+1.461E+2	+1.836E-3

137	31.81	---------	------	+1.479E+2	+2.019E-3
138	31.81	---------	------	+1.479E+2	+2.019E-3

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Station 2 (downwash)

RAW DATA--FILE NAME: UU0817S2C

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	15.545	-.121	.580	.527	-.027
2	.086	16.127	-.118	.602	.634	0.000
3	.116	16.413	-.057	.654	.802	-.122
4	.146	16.546	-.002	.687	.829	-.232
5	.176	16.705	.069	.652	.786	-.317
6	.226	17.005	.084	.547	.599	-.272
7	.276	17.183	.029	.338	.283	-.073
8	.326	17.230	.030	.231	.128	-.018

Upw [m/s]= 17.24 Cf= 4.600E-3

Station 2 (upwash)

RAW DATA--FILE NAME: UV0817S2T

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	8.688	-.821	1.210	2.344	-.169
2	.081	8.976	-.453	1.166	2.164	.160
3	.106	8.937	.065	1.158	2.019	.479
4	.126	9.029	.479	1.315	1.986	.868
5	.151	9.713	.918	1.548	1.932	.993
6	.176	11.196	1.050	1.893	1.737	.685
7	.206	13.847	.768	1.772	1.308	-.008
8	.236	15.803	.344	1.170	.770	-.173
9	.266	16.828	.116	.567	.295	-.039
10	.296	17.147	.055	.206	.161	-.018
11	.336	17.225	.060	.124	.065	-.002
12	.376	17.208	.067	.135	.050	.002

Upw [m/s]= 17.23 Cf= 2.100E-3

Station 3 (downwash)

RAW DATA--FILE NAME: UV0817S3C

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	12.047	-.039	1.343	1.122	-.654
2	.097	12.870	-.110	1.272	.984	-.607
3	.147	13.485	-.183	1.217	.939	-.610
4	.247	14.497	-.309	1.088	.867	-.518
5	.347	15.163	-.302	.980	.783	-.408
6	.447	15.732	-.304	.832	.685	-.290
7	.547	16.207	-.271	.712	.602	-.236
8	.647	16.596	-.277	.518	.482	-.128
9	.747	16.862	-.269	.374	.369	-.067
10	.847	16.977	-.239	.231	.259	-.024
11	.997	17.062	-.225	.151	.148	-.005

Upw [m/s]= 17.08 Cf= 4.800E-3

Station 3 (upwash)

RAW DATA--FILE NAME: UV0817S3T

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	10.949	-.145	1.322	1.190	-.689
2	.100	11.833	-.187	1.247	1.057	-.629
3	.150	12.414	-.137	1.184	.980	-.567
4	.200	12.950	-.175	1.194	.937	-.574
5	.300	13.768	-.199	1.123	.903	-.535
6	.400	14.470	-.170	1.071	.839	-.484
7	.500	15.138	-.193	.967	.761	-.398
8	.600	15.761	-.224	.834	.645	-.276
9	.700	16.235	-.228	.658	.523	-.169
10	.800	16.646	-.238	.496	.412	-.099
11	.900	16.915	-.236	.311	.285	-.031
12	1.050	17.053	-.232	.173	.162	-.007

Upw [m/s]= 17.11 Cf= 4.160E-3

Station 4 (downwash)

RAW DATA--FILE NAME: UV0817S4C

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	11.789	.085	1.441	1.118	-.591
2	.113	12.809	-.030	1.383	.918	-.576
3	.188	13.424	-.101	1.250	.835	-.503
4	.288	13.934	-.167	1.223	.888	-.548
5	.438	14.609	-.279	1.102	.884	-.514
6	.588	15.092	-.297	1.045	.835	-.492
7	.788	15.683	-.300	.923	.788	-.409
8	.988	16.218	-.280	.791	.661	-.264
9	1.188	16.679	-.281	.600	.514	-.160
10	1.388	16.969	-.268	.404	.380	-.078
11	1.588	17.121	-.255	.225	.276	-.026
12	1.888	17.198	-.270	.136	.133	-.003

Upw [m/s]= 17.14 Cf= 5.200E-3

Station 4 (upwash)

RAW DATA--FILE NAME: UV0817S4T

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	10.458	0.000	1.440	1.153	-.574
2	.146	11.899	.009	1.347	.928	-.554
3	.296	12.864	.001	1.291	.954	-.576
4	.446	13.471	.015	1.230	.937	-.590
5	.596	14.126	-.082	1.187	.914	-.579
6	.796	14.900	-.108	1.144	.846	-.515
7	.996	15.664	-.153	1.022	.780	-.449
8	1.196	16.310	-.172	.834	.633	-.269
9	1.396	16.806	-.179	.573	.495	-.138
10	1.596	17.093	-.215	.285	.311	-.034
11	1.896	17.204	-.228	.156	.150	-.005

Upw [m/s]= 17.13 Cf= 4.200E-3

Station 5 (downwash)

RAW DATA--FILE NAME: UV0817S5C

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	10.745	.002	1.493	1.110	-.545
2	.130	12.054	.020	1.380	.893	-.488
3	.230	12.810	-.067	1.396	.889	-.565
4	.380	13.572	-.166	1.292	.880	-.526
5	.580	14.179	-.189	1.234	.866	-.547
6	.780	14.759	-.299	1.101	.849	-.475
7	.980	15.178	-.253	1.018	.796	-.435
8	1.180	15.672	-.304	.932	.757	-.369
9	1.380	16.007	-.201	.834	.676	-.298
10	1.680	16.484	-.186	.641	.530	-.166
11	1.980	16.809	-.150	.426	.395	-.080
12	2.280	17.016	-.141	.240	.264	-.026
13	2.580	17.138	-.190	.150	.154	-.003
14	2.980	17.130	-.148	.125	.086	-.001

Upw [m/s]= 16.76 Cf= 4.700E-3

Station 5 (upwash)

RAW DATA--FILE NAME: UV0817SST

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	9.963	-.080	1.456	1.105	-.520
2	.130	11.176	-.011	1.400	.885	-.452
3	.280	12.271	-.005	1.375	.920	-.535
4	.480	12.947	.031	1.320	.949	-.607
5	.680	13.538	.017	1.255	.958	-.584
6	.880	14.021	.044	1.215	.938	-.585
7	1.080	14.574	.018	1.161	.909	-.534
8	1.280	15.000	.014	1.119	.864	-.535
9	1.580	15.712	-.027	1.007	.733	-.377
10	1.880	16.392	-.112	.769	.605	-.241
11	2.180	16.838	-.143	.451	.413	-.077
12	2.480	17.038	-.166	.247	.270	-.023
13	2.880	17.131	-.183	.144	.146	-.003

Upw [m/s]= 16.76 Cf= 3.700E-3

IVT0831S3C **Station 3 (downwash)**

R = 97.000 [cm] Tw-Tinf = 3.800 [C] Upw = 17.08 [m/S]
Qwall = 147.5 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	11.16	+.48	29.73	1.603	.943	.359	-.228	+.024
2	.085	12.35	-.43	29.50	1.458	.834	.300	-.464	-.256
3	.155	13.44	-.54	29.27	1.257	.747	.254	-.426	-.189
4	.255	14.49	-.62	29.06	1.149	.691	.238	-.380	+.019
5	.355	15.17	-.66	28.90	.947	.627	.225	-.256	-.119
6	.455	15.76	-.67	28.74	.826	.544	.210	-.189	-.098
7	.555	16.21	-.63	28.63	.688	.464	.204	-.122	-.07
8	.655	16.57	-.60	28.51	.539	.365	.178	-.071	-.048
9	.805	16.85	-.55	28.39	.339	.248	.126	-.026	-.020
10	.955	17.01	-.50	28.34	.186	.164	.067	-.006	-.003
11	1.155	17.09	-.48	28.33	.125	.084	.023	-.001	-0.000
12	1.455	17.13	-.45	28.32	.111	.046	.015	-0.000	+0.000

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	-.007	-.689	-.0060	12.511	-2.589	-6.485	1.000
2	+.120	-.403	+.0613	11.756	-2.468	+.812	1.000
3	+.090	-.257	+.0386	10.316	-2.235	+1.025	1.000
4	+.001	-.189	-.0097	8.423	-1.920	+136.734	1.000
5	+.069	-.131	+.0302	6.723	-1.627	+.904	1.000
6	+.055	-.112	+.0262	5.215	-1.355	+.898	1.000
7	+.048	-.086	+.0255	3.899	-1.106	+.722	1.000
8	+.033	-.051	+.0195	2.776	-.878	+.681	1.000
9	+.015	-.020	+.0105	1.453	-.576	+.697	1.000
10	+.005	-.006	+.0038	.563	-.323	+.654	1.000
11	+.001	-0.000	+.0001	.051	-.062	+1.893	1.000
12	+0.000	+0.000	-0.0000	.727	.167	-.403	1.000

FILE NAME : IVT083153C **Station 3 (downwash)**

****

U = SUM(A(N) * Y^N)

A0= +1.1634E+01 A1= +1.3631E+01 A2= -1.1440E+01 A3= +3.2097E+00

Y	U	UC	% DIFF
.1550	13.4434	13.484	+.302
.2550	14.4887	14.419	-.478
.3550	15.1681	15.175	+.046
.4550	15.7589	15.770	+.073
.5550	16.2088	16.224	+.096
.6550	16.5688	16.557	-.074
.8050	16.8531	16.868	+.091
.9550	17.0061	17.014	+.048
1.1550	17.0866	17.063	-.139
1.4550	17.1291	17.136	+.041

****

T = SUM(A(N) * Y^N)

A0= +2.9662E+01 A1= -2.7660E+00 A2= +1.7967E+00 A3= -3.6150E-01

Y	T	TC	% DIFF
.1550	29.2712	29.275	+.015
.2550	29.0644	29.068	+.012
.3550	28.8993	28.891	-.030
.4550	28.7447	28.742	-.010
.5550	28.6324	28.619	-.047
.6550	28.5140	28.520	+.021
.8050	28.3928	28.412	+.066
.9550	28.3360	28.345	+.031
1.1550	28.3295	28.308	-.077
1.4550	28.3224	28.328	+.020

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IVT0831S3T **Station 3 (upwash)**

R = 97.000 [cm] Tw-Tinf = 3.800 [C] Upw = 17.11 [m/S]
Qwall = 147.5 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	9.86	-.13	30.13	1.656	.961	.380	-.413	+.030
2	.095	11.15	-.22	29.84	1.510	.895	.321	-.605	+.037
3	.155	12.02	-.19	29.63	1.278	.871	.280	-.498	-.214
4	.205	12.56	-.22	29.51	1.245	.825	.257	-.486	-.197
5	.305	13.39	-.28	29.30	1.109	.767	.233	-.424	-.157
6	.405	14.15	-.29	29.13	1.082	.723	.230	-.412	-.157
7	.505	14.87	-.38	28.97	1.028	.653	.222	-.353	-.149
8	.605	15.47	-.39	28.83	.871	.577	.201	-.257	-.106
9	.705	16.02	-.41	28.69	.694	.473	.189	-.163	-.077
10	.805	16.42	-.42	28.59	.580	.405	.173	-.117	-.058
11	.905	16.77	-.44	28.50	.390	.303	.138	-.046	-.027
12	1.055	17.00	-.46	28.40	.182	.169	.077	-.007	-.004
13	1.205	17.06	-.45	28.36	.129	.095	.034	-0.000	-0.000
14	1.455	17.09	-.44	28.35	.116	.047	.019	-0.000	-0.000

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	-.005	-.435	-.0140	11.330	-2.472	-17.591	1.000
2	+.002	-.265	+.0165	10.803	-2.377	+70.068	1.000
3	+.116	-.114	+.0221	10.114	-2.250	+.953	1.000
4	+.106	-.090	+.0187	9.550	-2.146	+1.025	1.000
5	+.096	-.112	+.0262	8.454	-1.940	+1.019	1.000
6	+.092	-.119	+.0229	7.398	-1.737	+1.048	1.000
7	+.082	-.132	+.0302	6.384	-1.537	+1.032	1.000
8	+.069	-.135	+.0311	5.410	-1.341	+.924	1.000
9	+.052	-.095	+.0226	4.477	-1.148	+.811	1.000
10	+.043	-.074	+.0212	3.585	-.959	+.722	1.000
11	+.025	-.031	+.0135	2.734	-.772	+.532	1.000
12	+.007	-.004	+.0029	1.533	-.499	+.341	1.000
13	+.001	-0.000	+.0003	.425	-.234	+.063	1.000
14	+0.000	+0.000	-0.0000	-1.219	.192	+.102	1.000

ILE NAME : IVT0831S3T Station 3 (upwash)

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U = SUM(A(N) * Y^N)

A0= +1.0315E+01 A1= +1.1925E+01 A2= -6.0022E+00 A3= +6.8061E-01

Y	U	UC	% DIFF
.1550	12.0225	12.022	-.006
.2050	12.5631	12.513	-.396
.3050	13.3907	13.413	+.168
.4050	14.1467	14.205	+.415
.5050	14.8659	14.894	+.190
.6050	15.4672	15.484	+.106
.7050	16.0194	15.978	-.261
.8050	16.4188	16.380	-.234
.9050	16.7671	16.696	-.425
1.0550	16.9982	17.015	+.098
1.2050	17.0649	17.160	+.560
1.4550	17.0918	17.056	-.210

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T = SUM(A(N) * Y^N)

A0= +2.9898E+01 A1= -2.5794E+00 A2= +1.0740E+00 A3= -5.5699E-02

Y	T	TC	% DIFF
.1550	29.6318	29.624	-.026
.2050	29.5077	29.514	+.022
.3050	29.3020	29.310	+.027
.4050	29.1267	29.126	-.002
.5050	28.9675	28.962	-.018
.6050	28.8256	28.819	-.024
.7050	28.6910	28.694	+.011
.8050	28.5912	28.589	-.008
.9050	28.4953	28.502	+.025
1.0550	28.4033	28.407	+.013
1.2050	28.3587	28.352	-.023
1.4550	28.3461	28.347	+.005

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IVT0831S4C **Station 4 (downwash)**

R = 97.000 [cm] Tw-Tinf = 3.780 [C] Upw = 17.14 [m/S]
Qwall = 147.6 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't [m-C/
1	.050	10.51	+.54	29.70	1.592	.812	.422	-.077	+.09
2	.105	12.61	-.37	29.39	1.497	.735	.326	-.428	+.0
3	.205	13.63	-.47	29.17	1.276	.725	.280	-.392	-.2
4	.405	14.54	-.59	28.95	1.091	.719	.254	-.350	-.1
5	.605	15.14	-.64	28.77	.983	.663	.238	-.304	-.1
6	.805	15.75	-.62	28.61	.854	.621	.227	-.249	-.1
7	1.005	16.25	-.60	28.47	.748	.540	.213	-.184	-.0
8	1.205	16.64	-.57	28.33	.571	.419	.175	-.102	-.0
9	1.405	16.94	-.53	28.26	.377	.314	.131	-.038	-.0
10	1.605	17.08	-.50	28.21	.230	.226	.089	-.015	-.0
11	1.805	17.16	-.49	28.20	.170	.138	.041	-.003	-.0
12	2.005	17.20	-.50	28.19	.122	.086	.016	-0.000	-0.0

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.007	-.482	-.0061	4.880	-1.195	+2.701	1.000
2	-.007	-.284	+.0023	4.709	-1.168	-15.000	1.000
3	+.088	-.234	+.0364	4.404	-1.117	+1.125	1.000
4	+.093	-.105	+.0239	3.809	-1.009	+.993	1.000
5	+.061	-.102	+.0335	3.235	-.893	+1.032	1.000
6	+.073	-.126	+.0326	2.683	-.769	+.986	1.000
7	+.061	-.137	+.0403	2.152	-.638	+.889	1.000
8	+.040	-.078	+.0292	1.642	-.499	+.772	1.000
9	+.020	-.035	+.0160	1.154	-.351	+.566	1.000
10	+.010	-.011	+.0088	.688	-.196	+.425	1.000
11	+.002	-.001	+.0016	.243	-.034	+.211	1.000
12	+0.000	+0.000	+0.0000	-.181	.137	+1.101	1.000

FILE NAME : IVT0831S4C **Station 4 (downwash)**

****

U = SUM(A(N) * Y^N)

A0= +1.2685E+01 A1= +5.0360E+00 A2= -1.5696E+00 A3= +8.9325E-02

Y	U	UC	% DIFF
.2050	13.6311	13.652	+.154
.4050	14.5352	14.473	-.428
.6050	15.1357	15.177	+.272
.8050	15.7492	15.768	+.121
1.0050	16.2548	16.251	-.021
1.2050	16.6372	16.630	-.042
1.4050	16.9422	16.910	-.192
1.6050	17.0807	17.093	+.075
1.8050	17.1620	17.186	+.141
2.0050	17.2049	17.192	-.075

****

T = SUM(A(N) * Y^N)

A0= +2.9411E+01 A1= -1.2189E+00 A2= +2.3974E-01 A3= +3.2724E-02

Y	T	TC	% DIFF
.2050	29.1726	29.171	-.005
.4050	28.9516	28.959	+.024
.6050	28.7710	28.768	-.010
.8050	28.6100	28.602	-.028
1.0050	28.4708	28.461	-.034
1.2050	28.3268	28.347	+.072
1.4050	28.2571	28.262	+.018
1.6050	28.2111	28.207	-.014
1.8050	28.1993	28.184	-.054
2.0050	28.1856	28.194	+.031

****

IVT0831S4T **Station 4 (upwash)**

R = 97.000 [cm] Tw-Tinf = 3.780 [C] Upw = 17.13 [m/S]
Qwall = 147.6 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	9.39	+.48	30.18	1.642	.872	.432	-.101	+.041
2	.095	10.91	-.29	29.86	1.585	.789	.369	-.457	+.028
3	.135	11.60	-.28	29.72	1.430	.774	.340	-.446	-.322
4	.335	12.79	-.25	29.38	1.285	.826	.292	-.555	-.252
5	.485	13.42	-.30	29.21	1.223	.827	.283	-.516	-.240
6	.635	14.06	-.31	29.05	1.212	.817	.269	-.521	-.212
7	.835	14.82	-.39	28.86	1.111	.766	.258	-.437	-.179
8	1.035	15.59	-.45	28.67	1.020	.709	.247	-.387	-.165
9	1.235	16.19	-.49	28.52	.862	.586	.224	-.256	-.124
10	1.435	16.73	-.53	28.37	.615	.466	.178	-.125	-.065
11	1.635	17.08	-.56	28.30	.352	.320	.117	-.044	-.021
12	1.835	17.20	-.59	28.25	.173	.176	.049	-.001	-.001
13	2.135	17.23	-.59	28.25	.132	.090	.024	+0.000	+0.000

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.008	-.479	+.0037	5.383	-1.501	+3.565	1.000
2	+.003	-.271	+.0049	5.318	-1.474	+44.958	1.000
3	+.123	-.156	+.0427	5.258	-1.449	+1.000	1.000
4	+.136	-.021	+.0001	4.924	-1.321	+1.097	1.000
5	+.133	-.043	+.0115	4.636	-1.222	+1.020	1.000
6	+.133	-.102	+.0198	4.316	-1.119	+1.018	1.000
7	+.118	-.150	+.0342	3.841	-.976	+.941	1.000
8	+.107	-.257	+.0617	3.308	-.827	+.907	1.000
9	+.078	-.207	+.0507	2.720	-.673	+.817	1.000
10	+.051	-.141	+.0444	2.074	-.512	+.603	1.000
11	+.022	-.050	+.0219	1.372	-.345	+.508	1.000
12	+.003	-.002	+.0028	.614	-.172	+.117	1.000
13	+.001	+0.000	+.0003	-.630	.099	-.040	1.000

FILE NAME : IVT0831S4T **Station 4 (upwash)**

****

U = SUM(A(N) * Y^N)

A0= +1.0939E+01 A1= +5.4520E+00 A2= -6.6993E-01 A3= -2.3555E-01

Y	U	UC	% DIFF
.1350	11.5968	11.663	+.567
.3350	12.7894	12.682	-.843
.4850	13.4247	13.399	-.191
.6350	14.0563	14.071	+.104
.8350	14.8181	14.888	+.469
1.0350	15.5862	15.603	+.110
1.2350	16.1895	16.207	+.108
1.4350	16.7304	16.687	-.257
1.6350	17.0757	17.033	-.251
1.8350	17.2003	17.233	+.188
2.1350	17.2307	17.233	+.015

****

T = SUM(A(N) * Y^N)

A0= +2.9893E+01 A1= -1.5314E+00 A2= +3.0081E-01 A3= +2.5299E-02

Y	T	TC	% DIFF
.1350	29.7169	29.692	-.085
.3350	29.3772	29.414	+.127
.4850	29.2087	29.224	+.051
.6350	29.0538	29.048	-.020
.8350	28.8587	28.839	-.070
1.0350	28.6722	28.658	-.049
1.2350	28.5181	28.508	-.035
1.4350	28.3679	28.389	+.076
1.6350	28.2958	28.304	+.028
1.8350	28.2534	28.252	-.005
2.1350	28.2451	28.241	-.016

****

IVT0831SSC **Station 5 (downwash)**

R = 97.000 [cm] Tw-Tinf = 3.950 [C] Upw = 16.76 [m/S]
Qwall = 146.7 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	8.44	+.53	29.82	1.480	.721	.477	-.038	+.044
2	.115	11.54	-.39	29.41	1.618	.774	.374	-.448	+.030
3	.265	12.88	-.50	29.09	1.384	.732	.316	-.423	-.307
4	.515	13.80	-.58	28.84	1.180	.757	.267	-.425	-.204
5	.815	14.62	-.63	28.64	1.051	.733	.251	-.383	-.164
6	1.115	15.21	-.63	28.50	.929	.646	.231	-.303	-.132
7	1.415	15.80	-.62	28.36	.806	.559	.211	-.223	-.095
8	1.715	16.26	-.57	28.25	.632	.477	.184	-.141	-.065
9	2.015	16.64	-.52	28.17	.439	.368	.140	-.069	-.030
10	2.315	16.84	-.51	28.11	.260	.265	.093	-.021	-.009
11	2.615	16.92	-.50	28.08	.170	.155	.045	-.004	-.001
12	3.015	16.99	-.49	28.08	.122	.083	.018	+0.000	+0.000

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	-0.000	-.232	+.0151	3.864	-1.018	-108.721	1.000
2	-.001	-.323	+.0117	3.744	-.982	-107.595	1.000
3	+.111	-.151	+.0353	3.472	-.902	+.991	1.000
4	+.106	-.097	+.0322	3.037	-.776	+1.026	1.000
5	+.096	-.130	+.0419	2.546	-.636	+1.001	1.000
6	+.080	-.131	+.0402	2.087	-.509	+.926	1.000
7	+.064	-.133	+.0384	1.662	-.395	+.828	1.000
8	+.048	-.108	+.0347	1.269	-.294	+.680	1.000
9	+.028	-.065	+.0259	.910	-.205	+.554	1.000
10	+.015	-.020	+.0134	.583	-.129	+.320	1.000
11	+.003	-.003	+.0025	.289	-.066	+.299	1.000
12	+0.000	+0.000	+.0001	-.051	-.001	+.026	1.000

FILE NAME : IVT0831S5C **Station 5 (downwash)**

****

U = SUM(A(N) * Y^N)

A0= +1.1941E+01 A1= +3.9581E+00 A2= -9.4118E-01 A3= +6.1114E-02

Y	U	UC	% DIFF
.2650	12.8811	12.925	+.340
.5150	13.7991	13.738	-.443
.8150	14.6184	14.575	-.299
1.1150	15.2088	15.269	+.395
1.4150	15.7992	15.830	+.197
1.7150	16.2619	16.269	+.044
2.0150	16.6358	16.595	-.245
2.3150	16.8371	16.818	-.113
2.6150	16.9249	16.948	+.137
3.0150	16.9948	16.994	-.005

****

T = SUM(A(N) * Y^N)

A0= +2.9332E+01 A1= -1.0460E+00 A2= +2.8017E-01 A3= -2.3643E-02

Y	T	TC	% DIFF
.2650	29.0940	29.074	-.070
.5150	28.8354	28.864	+.099
.8150	28.6390	28.652	+.047
1.1150	28.4971	28.481	-.057
1.4150	28.3553	28.345	-.035
1.7150	28.2479	28.242	-.019
2.0150	28.1692	28.168	-.004
2.3150	28.1054	28.118	+.046
2.6150	28.0844	28.089	+.018
3.0150	28.0829	28.077	-.022

****

IVT0831S5T Station 5 (upwash)

R = 97.000 [cm] Tw-Tinf = 3.950 [C] Upw = 16.76 [m/S]
Qwall = 146.7 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	8.64	+.41	30.20	1.657	.854	.463	-.122	+.076
2	.100	10.34	-.28	29.84	1.495	.809	.386	-.477	+.012
3	.300	11.82	-.15	29.43	1.338	.786	.312	-.441	-.288
4	.500	12.61	-.14	29.23	1.252	.831	.279	-.441	-.231
5	.800	13.41	-.11	29.01	1.173	.835	.263	-.467	-.199
6	1.100	14.20	-.21	28.80	1.138	.804	.257	-.452	-.192
7	1.400	14.90	-.25	28.64	1.079	.766	.242	-.431	-.166
8	1.700	15.66	-.35	28.47	.941	.651	.229	-.314	-.138
9	2.000	16.26	-.41	28.32	.723	.523	.190	-.188	-.087
10	2.300	16.69	-.45	28.22	.470	.364	.129	-.084	-.036
11	2.600	16.87	-.46	28.17	.263	.255	.083	-.029	-.009
12	3.000	16.96	-.47	28.15	.133	.106	.024	+0.000	+0.000

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	-.020	-.304	+.0082	3.018	-.877	-1.741	1.000
2	+.006	-.211	+.0095	3.024	-.869	+23.632	1.000
3	+.120	-.044	+.0090	3.024	-.838	+1.018	1.000
4	+.116	-.037	-.0040	2.991	-.801	+1.020	1.000
5	+.125	+.057	-.0067	2.876	-.738	+.963	1.000
6	+.121	-.082	+.0188	2.685	-.665	+.927	1.000
7	+.113	-.172	+.0426	2.416	-.582	+.915	1.000
8	+.091	-.197	+.0565	2.071	-.488	+.812	1.000
9	+.060	-.188	+.0541	1.649	-.384	+.726	1.000
10	+.029	-.091	+.0294	1.151	-.269	+.673	1.000
11	+.013	-.036	+.0159	.575	-.144	+.561	1.000
12	+.001	+0.000	+.0007	-.312	.038	-.019	1.000

FILE NAME : IVT083155T **Station 5 (upwash)**

****

U = SUM(A(N) * Y^N)

A0= +1.0989E+01 A1= +3.0109E+00 A2= +8.6515E-02 A3= -1.4229E-01

Y	U	UC	% DIFF
.3000	11.8166	11.896	+.676
.5000	12.6084	12.499	-.872
.8000	13.4080	13.380	-.205
1.1000	14.1973	14.217	+.135
1.4000	14.8966	14.984	+.584
1.7000	15.6569	15.659	+.011
2.0000	16.2588	16.219	-.246
2.3000	16.6874	16.641	-.280
2.6000	16.8654	16.902	+.214
3.0000	16.9585	16.959	+.001

****

T = SUM(A(N) * Y^N)

A0= +2.9670E+01 A1= -8.8356E-01 A2= +6.7860E-02 A3= +1.9047E-02

Y	T	TC	% DIFF
.3000	29.4290	29.412	-.059
.5000	29.2255	29.248	+.076
.8000	29.0122	29.016	+.015
1.1000	28.7983	28.806	+.026
1.4000	28.6421	28.618	-.083
1.7000	28.4663	28.458	-.030
2.0000	28.3170	28.327	+.035
2.3000	28.2154	28.229	+.047
2.6000	28.1717	28.166	-.019
3.0000	28.1464	28.144	-.007

****

Case 5:

Mean and fluctuating velocity:	UP0606
Mean temperature:	T0602
Stanton number:	ST0602
Shear stress:	UV0613
Turbulent heat flux and Pr_t:	IVT0627

FILE: UP060651

STATION: 1

XSTA = .089 [m]
Cf = 6.000E-3
Upw = 17.70 [m/S]
Visc = 1.631E-5 [m^2/S]
REx = 9.648E+4
Del995 = 0.000E+0 [m]

DEL1 = 0.000E+0 [m]
DEL2 = 0.000E+0 [m]
H = 0.000
REdel1 = 0.000E+0
REdel2 = 0.000E+0

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.002	2.965	1.19	3.06	.00002	4.946
2	.004	3.092	2.38	3.19	.00004	5.017
3	.006	4.002	3.57	4.13	.00006	6.912
4	.009	5.094	5.35	5.25	.00009	8.820
5	.013	6.776	7.73	6.99	.00013	10.878
6	.017	7.922	10.10	8.17	.00018	11.745
7	.022	9.246	13.08	9.54	.00023	12.589
8	.032	10.847	19.02	11.19	.00033	12.519
9	.042	11.964	24.96	12.34	.00043	12.404
10	.052	12.640	30.91	13.04	.00054	11.962
11	.067	13.414	39.82	13.84	.00069	11.621
12	.087	14.141	51.71	14.59	.00090	11.200
13	.117	14.909	69.54	15.38	.00121	11.374
14	.167	15.721	99.26	16.22	.00172	10.699
15	.217	16.241	128.98	16.75	.00224	9.994
16	.417	17.105	247.86	17.64	.00430	9.177
17	.517	17.191	307.30	17.73	.00533	8.871
18	.717	17.393	426.18	17.94	.00739	8.816
19	1.017	17.485	604.50	18.04	.01048	8.822
20	1.317	17.664	782.82	18.22	.01358	8.748
21	1.617	17.780	961.14	18.34	.01667	8.623
22	1.917	17.872	1139.46	18.43	.01976	8.591
23	2.217	17.967	1317.78	18.53	.02286	8.502
24	2.717	18.108	1614.97	18.68	.02801	8.481
25	3.217	18.160	1912.17	18.73	.03316	8.201
26	3.717	18.284	2209.37	18.86	.03832	8.335

FILE: UP060652

STATION: 2

XSTA = .356 [m]
Cf = 5.900E-3
Upw = 17.70 [m/S]
Visc = 1.630E-5 [m^2/S]
REx = 3.861E+5
Del99S = 0.000E+0 [m]

DEL1 = 0.000E+0 [m]
DEL2 = 0.000E+0 [m]
H = 0.000
REdel1 = 0.000E+0
REdel2 = 0.000E+0

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.005	3.481	2.95	3.62	.00005	5.261
2	.007	4.571	4.13	4.75	.00007	7.161
3	.009	4.949	5.31	5.15	.00009	7.676
4	.011	5.241	6.49	5.45	.00011	8.143
5	.015	6.939	8.85	7.22	.00015	10.179
6	.020	8.575	11.80	8.92	.00021	11.510
7	.025	9.741	14.74	10.13	.00026	11.691
8	.030	10.580	17.69	11.01	.00031	11.940
9	.040	11.611	23.59	12.08	.00041	11.602
10	.055	12.766	32.44	13.28	.00057	11.000
11	.075	13.489	44.23	14.03	.00077	10.369
12	.095	14.027	56.03	14.59	.00098	10.213
13	.125	14.518	73.72	15.10	.00129	10.048
14	.175	15.195	103.21	15.81	.00180	9.763
15	.275	15.999	162.19	16.64	.00284	9.499
16	.325	16.368	191.67	17.03	.00335	9.240
17	.425	16.820	250.65	17.50	.00438	9.238
18	.575	17.299	339.12	17.99	.00593	8.735
19	.775	17.707	457.07	18.42	.00799	8.418
20	.975	18.046	575.02	18.77	.01005	7.986
21	1.375	18.299	810.93	19.03	.01418	7.511
22	1.775	18.408	1046.84	19.15	.01830	7.323
23	2.175	18.552	1282.74	19.30	.02242	7.180
24	2.575	18.621	1518.65	19.37	.02655	7.071
25	2.975	18.697	1754.56	19.45	.03067	7.052
26	3.375	18.775	1990.47	19.53	.03479	6.995
27	3.775	18.867	2226.37	19.63	.03892	6.928
28	4.275	18.899	2521.26	19.66	.04407	6.983
29	4.775	19.079	2816.14	19.85	.04923	6.856

FILE: UP0606S3

STATION: 3

XSTA = .610 [m]
Cf = 5.300E-3
Upw = 17.70 [m/S]
Visc = 1.626E-5 [m^2/S]
REx = 6.635E+5
Del995 = 0.000E+0 [m]

DEL1 = 0.000E+0 [m]
DEL2 = 0.000E+0 [m]
H = 0.000
REdel1 = 0.000E+0
REdel2 = 0.000E+0

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.009	4.604	5.04	5.05	.00009	7.390
2	.011	5.320	6.16	5.84	.00011	8.402
3	.013	5.953	7.28	6.53	.00013	9.263
4	.016	6.860	8.96	7.53	.00016	10.446
5	.020	7.901	11.21	8.67	.00021	11.259
6	.024	8.851	13.45	9.71	.00025	11.709
7	.029	9.632	16.25	10.57	.00030	11.678
8	.034	10.333	19.05	11.34	.00035	11.852
9	.044	11.179	24.65	12.27	.00045	11.371
10	.064	12.324	35.86	13.53	.00066	10.847
11	.084	12.912	47.06	14.17	.00087	10.443
12	.124	13.701	69.48	15.04	.00128	10.424
13	.174	14.320	97.49	15.72	.00179	10.388
14	.224	14.876	125.50	16.33	.00231	10.315
15	.324	15.573	181.53	17.09	.00334	10.175
16	.524	16.516	293.59	18.13	.00540	9.513
17	.724	17.110	405.65	18.78	.00746	9.145
18	.924	17.459	517.71	19.16	.00953	8.499
19	1.224	17.828	685.79	19.57	.01262	7.980
20	1.524	18.100	853.88	19.86	.01571	7.544
21	1.924	18.305	1078.00	20.09	.01984	7.083
22	2.324	18.430	1302.11	20.23	.02396	6.765
23	2.724	18.551	1526.23	20.36	.02808	6.523
24	3.124	18.620	1750.34	20.44	.03221	6.432
25	3.524	18.730	1974.46	20.56	.03633	6.352
26	3.924	18.760	2198.58	20.59	.04045	6.221
27	4.424	18.895	2478.72	20.74	.04561	6.138
28	4.924	18.949	2758.87	20.80	.05076	6.100
29	5.424	18.995	3039.01	20.85	.05592	6.124
30	5.924	19.046	3319.16	20.90	.06107	6.123

31	6.424	19.078	3599.30	20.94	.06623	6.145
32	6.924	19.073	3879.45	20.93	.07138	6.177

FILE: UP060654

STATION: 4

XSTA = .876 [m]
Cf = 5.300E-3
Upw = 17.70 [m/S]
Visc = 1.625E-5 [m^2/S]
REx = 9.543E+5
Del995 = 0.000E+0 [m]

DEL1 = 0.000E+0 [m]
DEL2 = 0.000E+0 [m]
H = 0.000
REdel1 = 0.000E+0
REdel2 = 0.000E+0

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.001	2.403	.56	2.64	.00001	3.168
2	.003	2.520	1.68	2.77	.00003	3.458
3	.006	3.144	3.36	3.45	.00006	4.801
4	.009	4.268	5.05	4.68	.00009	6.680
5	.012	5.525	6.73	6.06	.00012	8.808
6	.016	6.908	8.97	7.58	.00016	10.378
7	.019	7.760	10.65	8.52	.00020	11.113
8	.023	8.692	12.89	9.54	.00024	11.564
9	.028	9.602	15.70	10.54	.00029	11.811
10	.038	10.956	21.30	12.02	.00039	11.980
11	.048	11.771	26.91	12.92	.00049	11.628
12	.058	12.336	32.52	13.54	.00060	11.195
13	.078	13.043	43.73	14.31	.00080	10.797
14	.108	13.781	60.55	15.12	.00111	10.560
15	.158	14.445	88.58	15.85	.00163	10.322
16	.208	14.959	116.61	16.42	.00214	10.201
17	.308	15.643	172.67	17.17	.00318	10.098
18	.458	16.316	256.76	17.91	.00472	9.880
19	.658	16.793	368.89	18.43	.00678	9.542
20	.958	17.355	537.07	19.05	.00988	8.638
21	1.258	17.642	705.26	19.36	.01297	8.360
22	1.558	17.902	873.44	19.65	.01606	7.670
23	1.958	18.142	1097.69	19.91	.02019	7.133
24	2.358	18.322	1321.94	20.11	.02431	6.766
25	2.958	18.510	1658.31	20.32	.03049	6.341
26	3.458	18.606	1938.62	20.42	.03565	6.011
27	3.958	18.692	2218.93	20.51	.04080	5.811
28	4.458	18.774	2499.24	20.60	.04596	5.724
29	4.958	18.842	2779.55	20.68	.05111	5.648
30	5.458	18.798	3059.86	20.63	.05627	5.652

31	5.958	18.916	3340.17	20.76	.06142	5.695
32	6.458	18.923	3620.48	20.77	.06658	5.473
33	6.958	18.905	3900.79	20.75	.07173	5.564

FILE: UP0606S5

STATION: 5

XSTA = 1.130 [m]
Cf = 5.000E-3
Upw = 17.70 [m/S]
Visc = 1.621E-5 [m^2/S]
REx = 1.234E+6
Del995 = 0.000E+0 [m]

DEL1 = 0.000E+0 [m]
DEL2 = 0.000E+0 [m]
H = 0.000
REdel1 = 0.000E+0
REdel2 = 0.000E+0

	Y [cm]	U [m/s]	Y+	U+	y/R	u'/Upw
1	.002	2.296	1.09	2.59	.00002	3.183
2	.004	2.368	2.18	2.68	.00004	3.162
3	.007	3.333	3.82	3.77	.00007	5.410
4	.011	4.890	6.00	5.53	.00011	8.029
5	.016	6.597	8.73	7.45	.00016	10.199
6	.021	7.786	11.46	8.80	.00022	11.360
7	.026	8.845	14.19	9.99	.00027	11.666
8	.031	9.687	16.92	10.95	.00032	11.784
9	.041	10.869	22.38	12.28	.00042	11.472
10	.051	11.501	27.84	13.00	.00053	11.508
11	.071	12.460	38.75	14.08	.00073	10.734
12	.101	13.159	55.13	14.87	.00104	10.296
13	.131	13.692	71.50	15.47	.00135	10.189
14	.181	14.328	98.79	16.19	.00187	10.247
15	.281	15.159	153.37	17.13	.00290	10.294
16	.431	15.944	235.24	18.02	.00444	10.041
17	.581	16.394	317.11	18.52	.00599	9.744
18	.781	16.830	426.27	19.02	.00805	9.153
19	.981	17.114	535.44	19.34	.01011	8.872
20	1.281	17.325	699.18	19.58	.01321	8.326
21	1.581	17.609	862.92	19.90	.01630	7.715
22	1.881	17.751	1026.66	20.06	.01939	7.396
23	2.181	17.877	1190.40	20.20	.02248	7.140
24	2.581	18.002	1408.72	20.34	.02661	6.692
25	2.981	18.067	1627.05	20.41	.03073	6.632
26	3.481	18.181	1899.95	20.54	.03589	6.164
27	3.981	18.287	2172.85	20.66	.04104	5.751
28	4.481	18.295	2445.75	20.67	.04620	5.674
29	4.981	18.411	2718.66	20.80	.05135	5.470
30	5.481	18.367	2991.56	20.75	.05651	5.295

31	5.981	18.420	3264.46	20.81	.06166	5.308
32	6.481	18.346	3537.36	20.73	.06681	5.235
33	6.981	18.350	3810.27	20.74	.07197	5.108
34	7.481	18.332	4083.17	20.71	.07712	5.054

FILE: T0602S1

STATION: 1

Xsta	= .089 [m]	Del-ther	= 4.471E-3 [m]
Tw	= 32.16 [C]	Del-enth	= 3.441E-4 [m]
Tinf	= 29.07 [C]	Del-cond	= 3.674E-4 [m]
Qw	= 2.169E+2 [W/m^2]	Re-enth	= 3.707E+2
Yeff	= +5.000E-5 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 21.00 [W/m]

	Y [cm]	T [C]	Y+	T+	y/R	DT/DTw
1	+.007	31.624	4.11	2.75	.00007	.179
2	+.009	31.441	5.29	3.69	.00009	.240
3	+.010	31.331	5.88	4.25	.00010	.276
4	+.011	31.274	6.47	4.54	.00011	.295
5	+.012	31.199	7.06	4.92	.00012	.320
6	+.014	31.075	8.24	5.56	.00014	.361
7	+.016	30.922	9.43	6.34	.00016	.412
8	+.018	30.842	10.61	6.75	.00019	.438
9	+.020	30.749	11.79	7.23	.00021	.469
10	+.024	30.592	14.17	8.03	.00025	.521
11	+.028	30.460	16.54	8.71	.00029	.565
12	+.033	30.332	19.51	9.37	.00034	.608
13	+.038	30.238	22.47	9.85	.00039	.639
14	+.048	30.058	28.42	10.78	.00049	.698
15	+.058	29.963	34.36	11.27	.00060	.730
16	+.068	29.846	40.31	11.88	.00070	.769
17	+.088	29.700	52.21	12.63	.00091	.817
18	+.108	29.609	64.11	13.10	.00111	.847
19	+.138	29.498	81.97	13.67	.00142	.884
20	+.188	29.363	111.76	14.37	.00194	.929
21	+.238	29.291	141.54	14.74	.00245	.953
22	+.288	29.241	171.33	15.00	.00297	.969
23	+.338	29.204	201.12	15.20	.00348	.982
24	+.388	29.174	230.91	15.35	.00400	.992
25	+.488	29.157	290.45	15.44	.00503	.997
26	+.588	29.148	349.99	15.49	.00606	1.000
27	+.688	29.142	409.53	15.52	.00709	1.002
28	+.838	29.150	498.79	15.47	.00864	.999
29	+.988	29.145	588.08	15.50	.01019	1.001
30	+1.188	29.146	707.13	15.50	.01225	1.001
31	+1.488	29.151	885.67	15.47	.01534	.999

FILE: T0602S2

STATION: 2

Xsta = .343 [m]
Tw = 32.59 [C]
Tinf = 28.92 [C]
Qw = 2.138E+2 [W/m^2]
Yeff = +4.000E-5 [m]
Cond = 13.20

Del-ther = 1.408E-2 [m]
Del-enth = 9.346E-4 [m]
Del-cond = 4.397E-4 [m]
Re-enth = 1.006E+3
Prt = .950
Qadded = 67.19 [W/m]

	Y [cm]	T [C]	Y+	T+	y/R	DT/DTw
1	+.006	31.983	3.48	3.12	.00006	.171
2	+.008	31.951	4.65	3.28	.00008	.180
3	+.010	31.732	5.81	4.40	.00010	.242
4	+.012	31.603	6.98	5.07	.00012	.278
5	+.014	31.439	8.15	5.91	.00014	.324
6	+.016	31.293	9.33	6.67	.00016	.366
7	+.018	31.192	10.50	7.18	.00019	.394
8	+.022	31.024	12.84	8.05	.00023	.441
9	+.027	30.816	15.78	9.12	.00028	.499
10	+.032	30.670	18.72	9.88	.00033	.541
11	+.037	30.576	21.66	10.37	.00038	.567
12	+.042	30.460	24.60	10.97	.00043	.600
13	+.047	30.369	27.54	11.44	.00048	.625
14	+.052	30.308	30.49	11.75	.00054	.642
15	+.062	30.191	36.37	12.36	.00064	.675
16	+.072	30.113	42.26	12.77	.00074	.697
17	+.082	30.042	48.15	13.14	.00085	.717
18	+.102	29.931	59.93	13.72	.00105	.749
19	+.122	29.864	71.71	14.06	.00126	.767
20	+.172	29.711	101.19	14.86	.00177	.810
21	+.222	29.589	130.70	15.49	.00228	.845
22	+.272	29.521	160.19	15.85	.00280	.864
23	+.372	29.397	219.25	16.49	.00384	.899
24	+.472	29.299	278.35	17.00	.00487	.926
25	+.572	29.232	337.45	17.35	.00590	.945
26	+.772	29.154	455.65	17.76	.00796	.967
27	+.972	29.096	573.88	18.06	.01002	.983
28	+1.172	29.065	692.10	18.23	.01208	.992
29	+1.372	29.057	810.24	18.27	.01414	.994
30	+1.672	29.038	987.51	18.37	.01724	1.000
31	+1.972	29.034	1164.72	18.39	.02033	1.001
32	+2.272	29.034	1341.91	18.39	.02342	1.001
33	+2.572	29.035	1519.09	18.38	.02652	1.000
34	+2.972	29.039	1755.31	18.37	.03064	1.000

FILE: T0602S3

STATION: 3

Xsta	= .610 [m]	Del-ther	= 2.461E-2 [m]
Tw	= 32.91 [C]	Del-enth	= 1.533E-3 [m]
Tinf	= 28.80 [C]	Del-cond	= 4.980E-4 [m]
Qw	= 2.114E+2 [W/m^2]	Re-enth	= 1.649E+3
Yeff	= +1.000E-5 [m]	Prt	= .950
Cond	= 13.20	Qadded	= 123.38 [W/m]

	Y [cm]	T [C]	Y+	T+	y/R	DT/DTw
1	+.006	32.229	3.30	3.35	.00006	.172
2	+.009	32.226	4.95	3.36	.00009	.172
3	+.012	31.939	6.61	4.77	.00012	.244
4	+.015	31.642	8.27	6.24	.00015	.319
5	+.018	31.405	9.94	7.40	.00019	.378
6	+.021	31.233	11.61	8.25	.00022	.422
7	+.024	31.099	13.27	8.92	.00025	.455
8	+.028	30.933	15.50	9.74	.00029	.497
9	+.033	30.804	18.28	10.38	.00034	.529
10	+.038	30.681	21.07	10.99	.00039	.560
11	+.048	30.529	26.64	11.74	.00049	.598
12	+.058	30.387	32.21	12.45	.00060	.634
13	+.068	30.288	37.79	12.94	.00070	.659
14	+.078	30.206	43.37	13.35	.00080	.680
15	+.088	30.170	48.94	13.53	.00091	.689
16	+.108	30.056	60.10	14.10	.00111	.717
17	+.128	29.994	71.25	14.41	.00132	.733
18	+.158	29.887	88.01	14.94	.00163	.760
19	+.188	29.811	104.76	15.32	.00194	.779
20	+.238	29.705	132.71	15.85	.00245	.805
21	+.288	29.619	160.67	16.28	.00297	.827
22	+.388	29.494	216.62	16.90	.00400	.858
23	+.488	29.404	272.59	17.35	.00503	.881
24	+.688	29.252	384.65	18.11	.00709	.919
25	+.888	29.169	496.70	18.53	.00915	.940
26	+1.188	29.064	664.92	19.05	.01225	.966
27	+1.488	29.021	833.04	19.27	.01534	.977
28	+1.988	28.979	1113.22	19.48	.02049	.988
29	+2.488	28.949	1393.46	19.63	.02565	.995
30	+2.988	28.935	1673.64	19.70	.03080	.999
31	+3.488	28.935	1953.69	19.70	.03596	.999
32	+3.988	28.933	2233.78	19.71	.04111	.999
33	+4.488	28.932	2513.86	19.72	.04627	1.000

FILE: T060254

STATION: 4

Xsta = .876 [m]
Tw = 32.75 [C]
Tinf = 28.71 [C]
Qw = 2.118E+2 [W/m^2]
Yeff = +0.000E+0 [m]
Cond = 13.20

Del-ther = 4.760E-2 [m]
Del-enth = 2.553E-3 [m]
Del-cond = 4.970E-4 [m]
Re-enth = 2.748E+3
Prt = .950
Qadded = 205.61 [W/m]

	Y [cm]	T [C]	Y+	T+	y/R	DT/DTw
1	+.006	32.109	3.30	3.11	.00006	.160
2	+.009	32.017	4.95	3.56	.00009	.183
3	+.012	31.876	6.61	4.26	.00012	.218
4	+.015	31.680	8.27	5.22	.00015	.268
5	+.018	31.434	9.94	6.43	.00019	.329
6	+.022	31.196	12.16	7.60	.00023	.389
7	+.027	30.993	14.94	8.61	.00028	.440
8	+.032	30.828	17.73	9.43	.00033	.482
9	+.037	30.686	20.51	10.12	.00038	.517
10	+.042	30.581	23.30	10.64	.00043	.543
11	+.047	30.491	26.09	11.09	.00048	.566
12	+.052	30.424	28.87	11.42	.00054	.583
13	+.062	30.294	34.45	12.07	.00064	.616
14	+.072	30.188	40.03	12.59	.00074	.642
15	+.092	30.068	51.19	13.19	.00095	.672
16	+.112	29.963	62.36	13.71	.00115	.699
17	+.142	29.854	79.11	14.26	.00146	.726
18	+.172	29.779	95.87	14.63	.00177	.745
19	+.212	29.686	118.23	15.09	.00219	.768
20	+.262	29.591	146.18	15.57	.00270	.792
21	+.312	29.533	174.15	15.86	.00322	.807
22	+.412	29.411	230.13	16.46	.00425	.837
23	+.512	29.336	286.11	16.84	.00528	.856
24	+.712	29.208	398.17	17.48	.00734	.888
25	+1.012	29.091	566.32	18.06	.01043	.918
26	+1.312	29.014	734.54	18.45	.01353	.937
27	+1.612	28.951	902.83	18.76	.01662	.953
28	+2.012	28.912	1127.11	18.96	.02074	.963
29	+2.512	28.867	1407.58	19.18	.02590	.974
30	+3.012	28.836	1688.05	19.34	.03105	.982
31	+3.512	28.813	1968.54	19.45	.03621	.987
32	+4.012	28.799	2248.98	19.52	.04136	.991
33	+4.512	28.788	2529.43	19.58	.04652	.994

34	+5.012	28.777	2809.90	19.63	.05167	.996
35	+5.512	28.768	3090.39	19.68	.05682	.999
36	+6.012	28.764	3370.80	19.70	.06198	1.000
37	+6.512	28.762	3651.19	19.71	.06713	1.000

FILE: T0602S5

STATION: 5

Xsta = 1.130 [m]
Tw = 32.81 [C]
Tinf = 28.60 [C]
Qw = 2.108E+2 [W/m^2]
Yeff = +9.000E-5 [m]
Cond = 13.20

Del-ther = 5.117E-2 [m]
Del-enth = 2.767E-3 [m]
Del-cond = 5.171E-4 [m]
Re-enth = 2.979E+3
Prt = .950
Qadded = 230.81 [W/m]

	Y [cm]	T [C]	Y+	T+	y/R	DT/DTw
1	+.011	31.937	5.88	4.19	.00011	.213
2	+.013	31.834	6.95	4.69	.00013	.238
3	+.015	31.760	8.03	5.04	.00015	.256
4	+.018	31.570	9.64	5.96	.00019	.302
5	+.021	31.367	11.26	6.93	.00022	.351
6	+.026	31.128	13.97	8.08	.00027	.409
7	+.031	30.917	16.67	9.10	.00032	.460
8	+.041	30.625	22.09	10.51	.00042	.531
9	+.051	30.444	27.50	11.38	.00053	.575
10	+.071	30.209	38.34	12.52	.00073	.632
11	+.091	30.067	49.18	13.21	.00094	.666
12	+.141	29.822	76.31	14.40	.00145	.726
13	+.191	29.699	103.45	15.00	.00197	.756
14	+.291	29.510	157.78	15.92	.00300	.801
15	+.491	29.269	266.60	17.09	.00506	.860
16	+.691	29.165	375.42	17.60	.00712	.885
17	+.891	29.075	484.34	18.04	.00919	.907
18	+1.191	28.977	647.79	18.52	.01228	.931
19	+1.491	28.946	811.11	18.67	.01537	.938
20	+1.791	28.912	974.50	18.84	.01846	.946
21	+2.091	28.862	1138.06	19.08	.02156	.958
22	+2.491	28.820	1356.10	19.29	.02568	.969
23	+2.991	28.811	1628.39	19.33	.03084	.971
24	+3.491	28.779	1900.96	19.49	.03599	.979
25	+3.991	28.749	2173.61	19.64	.04114	.986
26	+4.491	28.741	2446.04	19.67	.04630	.988
27	+4.991	28.714	2718.80	19.81	.05145	.994
28	+5.991	28.694	3263.92	19.90	.06176	.999
29	+6.991	28.687	3808.87	19.94	.07207	1.001

FILENAME: ST0602

Uinf: 18.56 [m/s]
HEAT FLUX TO HEATER: 236.0 [W/m^2]
HEAT LOSS THROUGH BACK WALL OVER DA: .082 [W]
FREESTREAM TEMPERATURE: 29.37 [C]

	Twall [C]	REx	Enth [m]	Qconv [W/m^2]	St
1	31.27	+4.308E+4	+3.821E-6	+2.126E+2	+5.272E-3
2	31.54	+7.175E+4	+1.226E-4	+2.208E+2	+4.796E-3
3	31.89	+1.003E+5	+2.121E-4	+2.188E+2	+4.093E-3
4	32.24	+1.289E+5	+3.129E-4	+2.166E+2	+3.556E-3
5	31.81	+1.577E+5	+3.989E-4	+2.196E+2	+4.240E-3
6	32.42	+1.861E+5	+4.660E-4	+2.156E+2	+3.334E-3
7	32.22	+2.148E+5	+5.909E-4	+2.169E+2	+3.589E-3
8	32.02	+2.436E+5	+6.738E-4	+2.182E+2	+3.879E-3
9	32.32	+2.720E+5	+6.832E-4	+2.164E+2	+3.459E-3
10	32.75	+3.003E+5	+7.355E-4	+2.138E+2	+2.985E-3
11	32.60	+3.290E+5	+8.250E-4	+2.149E+2	+3.136E-3
12	32.65	+3.576E+5	+9.019E-4	+2.145E+2	+3.084E-3
13	32.62	+3.862E+5	+9.656E-4	+2.148E+2	+3.119E-3
14	32.76	+4.147E+5	+1.003E-3	+2.139E+2	+2.981E-3
15	32.89	+4.431E+5	+1.051E-3	+2.131E+2	+2.855E-3
16	32.93	+4.716E+5	+1.135E-3	+2.129E+2	+2.820E-3
17	32.82	+5.004E+5	+1.250E-3	+2.136E+2	+2.921E-3
18	32.69	+5.292E+5	+1.317E-3	+2.144E+2	+3.046E-3
19	32.87	+5.575E+5	+1.326E-3	+2.133E+2	+2.881E-3
20	33.04	+5.858E+5	+1.372E-3	+2.123E+2	+2.732E-3
21	33.01	+6.144E+5	+1.456E-3	+2.125E+2	+2.759E-3
22	32.97	+6.431E+5	+1.498E-3	+2.128E+2	+2.794E-3
23	33.14	+6.713E+5	+1.505E-3	+2.117E+2	+2.650E-3
24	33.28	+6.996E+5	+1.563E-3	+2.109E+2	+2.547E-3
25	33.18	+7.283E+5	+1.682E-3	+2.115E+2	+2.619E-3
26	33.03	+7.572E+5	+1.809E-3	+2.124E+2	+2.740E-3
27	32.93	+7.860E+5	+1.899E-3	+2.130E+2	+2.821E-3
28	32.96	+8.146E+5	+1.889E-3	+2.129E+2	+2.801E-3
29	33.24	+8.425E+5	+1.889E-3	+2.111E+2	+2.576E-3
30	33.24	+8.710E+5	+1.964E-3	+2.112E+2	+2.578E-3
31	33.20	+8.997E+5	+2.105E-3	+2.114E+2	+2.606E-3
32	32.96	+9.289E+5	+2.237E-3	+2.129E+2	+2.802E-3
33	32.99	+9.574E+5	+2.218E-3	+2.127E+2	+2.774E-3
34	33.25	+9.852E+5	+2.254E-3	+2.110E+2	+2.570E-3
35	33.10	+1.014E+6	+2.356E-3	+2.120E+2	+2.682E-3
36	33.13	+1.043E+6	+2.379E-3	+2.119E+2	+2.663E-3
37	33.25	+1.071E+6	+2.369E-3	+2.111E+2	+2.569E-3
38	33.38	+1.099E+6	+2.439E-3	+2.103E+2	+2.480E-3

39	33.23	+1.128E+6	+2.598E-3	+2.112E+2	+2.584E-3
40	33.09	+1.157E+6	+2.711E-3	+2.121E+2	+2.695E-3
41	33.10	+1.186E+6	+2.780E-3	+2.120E+2	+2.681E-3
42	33.09	+1.214E+6	+2.758E-3	+2.121E+2	+2.696E-3
43	33.35	+1.242E+6	+2.745E-3	+2.105E+2	+2.502E-3
44	33.31	+1.271E+6	+2.832E-3	+2.108E+2	+2.526E-3
45	33.28	+1.299E+6	+3.036E-3	+2.109E+2	+2.547E-3
46	32.94	+1.329E+6	+3.213E-3	+2.130E+2	+2.816E-3
47	33.03	+1.357E+6	+3.178E-3	+2.124E+2	+2.740E-3
48	33.18	+1.385E+6	+3.172E-3	+2.115E+2	+2.619E-3
49	33.21	+1.414E+6	+3.238E-3	+2.114E+2	+2.601E-3
50	33.18	+1.442E+6	+3.421E-3	+2.114E+2	+2.618E-3
51	32.94	+1.472E+6	+3.541E-3	+2.130E+2	+2.816E-3
52	33.08	+1.500E+6	+3.657E-3	+2.120E+2	+2.698E-3

**********CROSS-SPAN DATA**********

61	30.87	---------	------	+2.245E+2	+7.059E-3
62	31.53	---------	------	+2.208E+2	+4.815E-3
63	37.01	---------	------	+1.894E+2	+1.179E-3
64	32.25	---------	------	+2.168E+2	+3.551E-3
65	48.80	---------	------	+1.159E+2	+2.892E-4
66	32.05	---------	------	+2.179E+2	+3.838E-3
67	32.08	---------	------	+2.177E+2	+3.789E-3
68	31.97	---------	------	+2.183E+2	+3.952E-3
69	30.99	---------	------	+2.238E+2	+6.477E-3
70	31.25	---------	------	+2.224E+2	+5.553E-3

**********CROSS-SPAN DATA**********

71	31.71	---------	------	+2.198E+2	+4.430E-3
72	32.54	---------	------	+2.152E+2	+3.203E-3
73	32.22	---------	------	+2.169E+2	+3.583E-3
74	32.61	---------	------	+2.147E+2	+3.126E-3
75	32.56	---------	------	+2.151E+2	+3.186E-3
76	32.66	---------	------	+2.145E+2	+3.076E-3
77	32.58	---------	------	+2.149E+2	+3.160E-3
78	32.47	---------	------	+2.156E+2	+3.284E-3
79	3.22	---------	------	+3.581E+2	-6.161E-4
80	32.48	---------	------	+2.155E+2	+3.266E-3
81	32.39	---------	------	+2.160E+2	+3.379E-3
82	32.13	---------	------	+2.175E+2	+3.718E-3
83	32.18	---------	------	+2.172E+2	+3.638E-3
84	31.68	---------	------	+2.200E+2	+4.479E-3
85	32.24	---------	------	+2.168E+2	+3.562E-3
86	31.85	---------	------	+2.190E+2	+4.156E-3

**********CROSS-SPAN DATA**********

87	32.40	---------	------	+2.159E+2	+3.359E-3
88	32.68	---------	------	+2.144E+2	+3.060E-3
89	32.84	---------	------	+2.135E+2	+2.906E-3
90	32.91	---------	------	+2.131E+2	+2.842E-3

91	33.06	---------	------	+2.122E+2	+2.720E-3
92	33.19	---------	------	+2.115E+2	+2.614E-3
93	32.97	---------	------	+2.127E+2	+2.793E-3
94	32.85	---------	------	+2.134E+2	+2.892E-3
95	32.85	---------	------	+2.134E+2	+2.892E-3
96	32.85	---------	------	+2.134E+2	+2.899E-3
97	32.89	---------	------	+2.132E+2	+2.856E-3
98	32.73	---------	------	+2.141E+2	+3.005E-3
99	33.30	---------	------	+2.109E+2	+2.537E-3
100	32.74	---------	------	+2.140E+2	+2.997E-3
101	32.89	---------	------	+2.132E+2	+2.856E-3
102	32.96	---------	------	+2.128E+2	+2.800E-3

**********CROSS-SPAN DATA**********

103	32.87	---------	------	+2.133E+2	+2.877E-3
104	33.39	---------	------	+2.104E+2	+2.476E-3
105	33.89	---------	------	+2.075E+2	+2.170E-3
106	33.71	---------	------	+2.085E+2	+2.273E-3
107	33.79	---------	------	+2.081E+2	+2.227E-3
108	33.69	---------	------	+2.086E+2	+2.283E-3
109	33.57	---------	------	+2.093E+2	+2.356E-3
110	33.47	---------	------	+2.099E+2	+2.417E-3
111	33.50	---------	------	+2.097E+2	+2.401E-3
112	33.45	---------	------	+2.100E+2	+2.433E-3
113	33.39	---------	------	+2.103E+2	+2.470E-3
114	33.38	---------	------	+2.104E+2	+2.481E-3
115	33.35	---------	------	+2.106E+2	+2.503E-3
116	33.27	---------	------	+2.110E+2	+2.554E-3
117	33.25	---------	------	+2.111E+2	+2.572E-3
118	33.15	---------	------	+2.117E+2	+2.644E-3

**********CROSS-SPAN DATA**********

119	33.06	---------	------	+2.122E+2	+2.720E-3
120	33.67	---------	------	+2.087E+2	+2.292E-3
121	33.77	---------	------	+2.082E+2	+2.236E-3
122	33.73	---------	------	+2.084E+2	+2.259E-3
123	33.64	---------	------	+2.089E+2	+2.311E-3
124	33.46	---------	------	+2.100E+2	+2.427E-3
125	33.37	---------	------	+2.105E+2	+2.487E-3
126	33.43	---------	------	+2.101E+2	+2.443E-3
127	33.30	---------	------	+2.108E+2	+2.532E-3
128	33.16	---------	------	+2.116E+2	+2.638E-3

**********CROSS-SPAN DATA**********

129	32.68	---------	------	+2.143E+2	+3.052E-3
130	33.63	---------	------	+2.090E+2	+2.321E-3
131	34.03	---------	------	+2.067E+2	+2.099E-3
132	33.86	---------	------	+2.076E+2	+2.179E-3
133	33.54	---------	------	+2.095E+2	+2.376E-3
134	33.43	---------	------	+2.101E+2	+2.443E-3
135	33.48	---------	------	+2.098E+2	+2.414E-3
136	33.52	---------	------	+2.096E+2	+2.386E-3

137	33.47	---------	------	+2.099E+2	+2.417E-3
138	33.47	---------	------	+2.099E+2	+2.417E-3

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Station 1

RAW DATA--FILE NAME: UV0613S1

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	13.244	.126	1.921	1.397	-.793
2	.115	15.241	-.089	1.957	1.130	-.737
3	.165	16.157	-.194	1.878	.984	-.460
4	.315	17.182	-.197	1.713	.839	-.327
5	.465	17.374	-.237	1.653	.905	-.318
6	.615	17.548	-.245	1.630	.974	-.247
7	.765	17.629	-.286	1.591	1.037	-.262
8	.915	17.667	-.309	1.584	1.116	-.405
9	1.065	17.719	-.333	1.624	1.161	-.429
10	1.265	17.834	-.283	1.592	1.231	-.471
11	1.465	17.983	-.351	1.584	1.223	-.481
12	1.965	18.073	-.373	1.577	1.336	-.478
13	2.465	18.206	-.352	1.551	1.369	-.388
14	2.965	18.329	-.393	1.532	1.381	-.368
15	3.465	18.481	-.345	1.468	1.423	-.278
16	3.965	18.558	-.341	1.526	1.488	-.415
17	4.465	18.606	-.416	1.520	1.500	-.404
18	4.965	18.666	-.403	1.474	1.487	-.344
19	5.965	18.833	-.327	1.496	1.485	-.262
20	6.965	18.885	-.404	1.495	1.445	-.210
21	7.965	18.927	-.423	1.487	1.391	-.112
22	8.965	18.673	-.500	1.602	1.307	.148

Upw [m/s]= 17.70 Cf= 6.000E-3

Station 2

RAW DATA--FILE NAME: UV0613S2

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	13.623	.145	1.819	1.252	-.700
2	.136	15.029	.037	1.754	1.024	-.655
3	.336	16.682	-.109	1.681	.927	-.629
4	.536	17.391	-.136	1.594	.972	-.629
5	.736	17.894	-.236	1.545	.973	-.491
6	.936	18.163	-.210	1.506	.992	-.499
7	1.136	18.332	-.273	1.417	1.058	-.408
8	1.336	18.482	-.295	1.346	1.116	-.508
9	1.536	18.501	-.313	1.362	1.134	-.478
10	1.786	18.582	-.343	1.325	1.202	-.519
11	2.036	18.667	-.390	1.327	1.244	-.508
12	2.336	18.690	-.385	1.328	1.284	-.494
13	2.636	18.780	-.470	1.289	1.284	-.534
14	2.936	18.834	-.447	1.294	1.360	-.685
15	3.236	18.896	-.534	1.269	1.369	-.602
16	3.636	18.960	-.533	1.241	1.331	-.532
17	4.036	18.986	-.568	1.278	1.381	-.548
18	4.536	19.132	-.620	1.281	1.340	-.497
19	5.036	19.215	-.679	1.218	1.372	-.499

Upw [m/s]= 17.70 Cf= 5.900E-3

Station 3

RAW DATA--FILE NAME: UV0613S3

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	12.714	-.050	1.865	1.244	-.810
2	.140	14.299	-.157	1.836	1.034	-.742
3	.290	15.612	-.233	1.838	1.001	-.806
4	.490	16.523	-.262	1.760	.987	-.736
5	.740	17.275	-.288	1.642	1.005	-.782
6	.990	17.717	-.321	1.540	1.064	-.715
7	1.240	17.973	-.339	1.463	1.074	-.699
8	1.490	18.187	-.366	1.335	1.060	-.555
9	1.740	18.286	-.332	1.253	1.103	-.575
10	1.990	18.403	-.378	1.265	1.165	-.618
11	2.240	18.446	-.375	1.253	1.176	-.606
12	2.490	18.557	-.350	1.196	1.209	-.556
13	2.990	18.705	-.399	1.170	1.227	-.562
14	3.490	18.761	-.409	1.157	1.336	-.632
15	3.990	18.837	-.435	1.130	1.303	-.636
16	4.490	18.932	-.466	1.137	1.270	-.578
17	4.990	19.005	-.493	1.128	1.275	-.573
18	5.490	19.059	-.389	1.118	1.282	-.536
19	5.990	19.117	-.296	1.138	1.265	-.574
20	6.490	19.211	-.488	1.108	1.224	-.513
21	6.990	19.177	-.304	1.119	1.160	-.350
22	7.990	19.163	-.290	1.196	1.054	-.288
23	8.990	18.666	-.332	1.190	.908	-.027

Upw [m/s]= 17.70 Cf= 5.300E-3

Station 4

RAW DATA--FILE NAME: UV0613S4

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	12.933	0.000	1.919	1.235	-.818
2	.135	14.528	-.005	1.830	1.017	-.634
3	.335	15.974	-.121	1.806	1.010	-.813
4	.635	16.968	-.251	1.743	1.079	-.850
5	.935	17.525	-.375	1.567	1.088	-.750
6	1.235	17.776	-.327	1.555	1.179	-.932
7	1.535	18.028	-.357	1.424	1.185	-.815
8	1.835	18.177	-.390	1.374	1.155	-.749
9	2.135	18.339	-.421	1.301	1.240	-.727
10	2.435	18.452	-.407	1.276	1.216	-.774
11	2.735	18.600	-.470	1.206	1.267	-.715
12	3.035	18.699	-.549	1.171	1.216	-.652
13	3.535	18.762	-.501	1.158	1.279	-.725
14	3.535	18.833	-.569	1.068	1.259	-.635
15	4.535	18.861	-.581	1.067	1.282	-.651
16	5.035	18.960	-.608	1.029	1.251	-.591
17	5.535	19.042	-.650	1.043	1.250	-.571
18	6.035	19.033	-.629	1.017	1.229	-.530
19	6.535	19.039	-.665	1.018	1.172	-.465
20	7.035	19.009	-.666	.990	1.131	-.399
21	8.035	18.918	-.675	1.011	1.024	-.293
22	9.035	18.607	-.637	1.021	.884	-.107
23	10.035	17.200	-.477	1.304	.804	.196

Upw [m/s]= 17.70 Cf= 5.300E-3

Station 5

RAW DATA--FILE NAME: UV061355

N	Y [cm]	U [m/s]	V [m/s]	u' [m/S]	v' [m/s]	u'v' [m2/s2]
1	.060	12.587	-.040	1.889	1.264	-.762
2	.160	14.563	-.159	1.872	1.016	-.738
3	.360	15.931	-.256	1.843	.990	-.845
4	.660	16.986	-.315	1.667	1.005	-.754
5	.960	17.316	-.367	1.595	1.056	-.814
6	1.260	17.597	-.364	1.459	1.103	-.746
7	1.560	17.896	-.411	1.351	1.164	-.747
8	1.860	17.970	-.487	1.344	1.182	-.816
9	2.160	18.014	-.452	1.330	1.232	-.824
10	2.460	18.131	-.478	1.225	1.264	-.783
11	2.760	18.247	-.507	1.223	1.265	-.798
12	3.060	18.248	-.503	1.179	1.271	-.772
13	3.560	18.325	-.532	1.086	1.254	-.655
14	4.060	18.464	-.581	1.086	1.222	-.621
15	4.560	18.453	-.543	1.018	1.242	-.612
16	5.060	18.476	-.568	.999	1.222	-.556
17	5.560	18.499	-.547	.956	1.226	-.506
18	6.060	18.498	-.495	.909	1.128	-.374
19	6.560	18.502	-.628	.904	1.079	-.332
20	7.060	18.453	-.536	.886	1.081	-.302
21	8.060	18.327	-.426	.930	1.004	-.167
22	9.060	17.957	-.259	.940	.826	-.058
23	10.060	16.914	-.261	1.203	.769	.154

Upw [m/s]= 17.70 Cf= 5.000E-3

IVT062752 **Station 2**

R = 97.000 [cm] Tw-Tinf = 3.390 [C] Upw = 17.70 [m/S]
Qwall = 213.9 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	14.22	-.74	31.31	2.120	1.014	.412	-.840	-.509
2	.200	16.05	-.86	30.91	1.893	.877	.326	-.788	-.392
3	.350	17.13	-.93	30.67	1.804	.870	.277	-.732	-.296
4	.550	17.94	-1.00	30.50	1.702	.895	.234	-.740	-.213
5	.750	18.41	-1.01	30.40	1.580	.911	.183	-.582	-.136
6	.950	18.80	-1.08	30.35	1.494	.963	.147	-.575	-.096
7	1.200	19.03	-1.14	30.31	1.459	.955	.112	-.442	-.057
8	1.400	19.06	-1.10	30.30	1.364	1.011	.096	-.497	-.041
9	1.600	19.15	-1.14	30.29	1.376	1.026	.078	-.478	-.032
10	1.850	19.19	-1.13	30.28	1.379	1.102	.068	-.526	-.030
11	2.100	19.26	-1.12	30.29	1.309	1.089	.057	-.470	-.022
12	2.400	19.27	-1.17	30.29	1.375	1.114	.051	-.553	-.019
13	2.700	19.42	-1.25	30.30	1.298	1.152	.046	-.466	-.012
14	3.200	19.46	-1.19	30.29	1.336	1.185	.043	-.556	-.009

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.164	-.608	+.1115	3.694	-.722	+.893	1.000
2	+.139	-.184	+.0409	3.210	-.623	+1.102	1.000
3	+.128	-.267	+.0590	2.760	-.530	+1.098	1.000
4	+.116	-.271	+.0760	2.213	-.418	+1.210	1.000
5	+.093	-.318	+.0667	1.726	-.318	+1.149	1.000
6	+.082	-.330	+.0670	1.301	-.231	+1.246	1.000
7	+.055	-.165	+.0337	.854	-.139	+1.305	1.000
8	+.049	-.210	+.0458	.565	-.079	+1.418	1.000
9	+.039	-.128	+.0373	.336	-.032	+1.172	1.000
10	+.036	-.218	+.0299	.135	.010	-1.065	1.000
11	+.028	-.116	+.0162	.029	.032	-18.276	1.000
12	+.027	-.229	+.0205	.027	.034	-25.606	1.000
13	+.021	-.211	+.0160	.161	.007	-.945	1.000
14	+.020	-.113	+.0103	.688	-.099	+3.954	1.000

FILE NAME : IVT062752 **Station 2**

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U = SUM(A(N) * Y^N)

A0= +1.6356E+01 A1= +3.8625E+00 A2= -1.7082E+00 A3= +2.5255E-01

Y	U	UC	% DIFF
.5500	17.9443	18.006	+.345
.7500	18.4078	18.399	-.048
.9500	18.8014	18.701	-.536
1.2000	19.0286	18.968	-.318
1.4000	19.0640	19.109	+.235
1.6000	19.1536	19.198	+.231
1.8500	19.1920	19.255	+.327
2.1000	19.2589	19.273	+.076
2.4000	19.2665	19.278	+.062
2.7000	19.4170	19.303	-.585
3.2000	19.4566	19.500	+.223

****

T = SUM(A(N) * Y^N)

A0= +3.0806E+01 A1= -7.5668E-01 A2= +3.5029E-01 A3= -5.1570E-02

Y	T	TC	% DIFF
.5500	30.4985	30.487	-.036
.7500	30.4039	30.414	+.033
.9500	30.3492	30.359	+.033
1.2000	30.3107	30.313	+.009
1.4000	30.3006	30.292	-.029
1.6000	30.2876	30.281	-.022
1.8500	30.2787	30.279	-0.000
2.1000	30.2872	30.284	-.010
2.4000	30.2916	30.295	+.011
2.7000	30.2954	30.302	+.021
3.2000	30.2852	30.282	-.011

****

IVT0627S3 **Station 3**

R = 97.000 [cm] Tw-Tinf = 3.910 [C] Upw = 17.70 [m/S]
Qwall = 210.9 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	12.49	-.77	31.69	2.159	1.077	.525	-.916	-.654
2	.200	15.14	-.95	31.06	1.889	.944	.389	-.863	-.474
3	.500	16.97	-1.16	30.64	1.781	.949	.308	-.871	-.358
4	.800	17.73	-1.22	30.54	1.673	.949	.255	-.770	-.268
5	1.100	18.20	-1.26	30.43	1.574	.994	.215	-.838	-.199
6	1.400	18.62	-1.26	30.37	1.407	1.010	.174	-.679	-.130
7	1.700	18.79	-1.25	30.35	1.358	1.029	.150	-.621	-.094
8	2.000	18.93	-1.33	30.32	1.314	1.041	.116	-.616	-.085
9	2.400	19.07	-1.30	30.32	1.224	1.069	.098	-.488	-.043
10	2.800	19.15	-1.32	30.28	1.173	1.088	.083	-.508	-.032
11	3.200	19.26	-1.29	30.31	1.146	1.115	.064	-.525	-.023
12	3.600	19.38	-1.32	30.33	1.137	1.176	.056	-.499	-.016
13	4.000	19.42	-1.33	30.32	1.129	1.213	.051	-.511	-.015
14	4.500	19.49	-1.30	30.31	1.112	1.182	.049	-.497	-.012

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.278	-.748	+.2154	2.492	-.558	+.738	1.000
2	+.184	-.296	+.1168	2.281	-.505	+1.037	1.000
3	+.159	-.517	+.1167	1.889	-.406	+1.172	1.000
4	+.137	-.416	+.0912	1.535	-.317	+1.156	1.000
5	+.129	-.631	+.1136	1.221	-.238	+1.266	1.000
6	+.105	-.538	+.0925	.947	-.170	+1.153	1.000
7	+.089	-.324	+.0750	.711	-.112	+1.098	1.000
8	+.066	-.294	+.0564	.514	-.064	+1.148	1.000
9	+.057	-.254	+.0468	.313	-.016	+.439	1.000
10	+.043	-.205	+.0363	.182	.013	-.868	1.000
11	+.038	-.172	+.0386	.120	.025	-2.869	1.000
12	+.031	-.115	+.0296	.128	.018	-2.192	1.000
13	+.031	-.216	+.0283	.205	-.008	+.609	1.000
14	+.026	-.123	+.0281	.400	-.065	+3.079	1.000

FILE NAME : IVT0627S3 **Station 3**

****

U = SUM(A(N) * Y^N)

A0= +1.6163E+01 A1= +2.5643E+00 A2= -7.3013E-01 A3= +7.2543E-02

Y	U	UC	% DIFF
.8000	17.7347	17.784	+.279
1.1000	18.2045	18.197	-.043
1.4000	18.6166	18.521	-.514
1.7000	18.7861	18.769	-.094
2.0000	18.9286	18.951	+.120
2.4000	19.0717	19.114	+.224
2.8000	19.1462	19.211	+.339
3.2000	19.2617	19.269	+.039
3.6000	19.3782	19.316	-.319
4.0000	19.4248	19.381	-.226
4.5000	19.4883	19.528	+.202

****

T = SUM(A(N) * Y^N)

A0= +3.0881E+01 A1= -5.7652E-01 A2= +1.8528E-01 A3= -1.9028E-02

Y	T	TC	% DIFF
.8000	30.5399	30.529	-.037
1.1000	30.4307	30.446	+.049
1.4000	30.3731	30.385	+.038
1.7000	30.3539	30.343	-.036
2.0000	30.3210	30.317	-.014
2.4000	30.3163	30.301	-.049
2.8000	30.2830	30.302	+.061
3.2000	30.3095	30.310	+.001
3.6000	30.3265	30.319	-.025
4.0000	30.3160	30.321	+.018
4.5000	30.3063	30.305	-.006

****

IVT062754 **Station 4**

R = 97.000 [cm] Tw-Tinf = 3.940 [C] Upw = 17.70 [m/S]
Qwall = 211.0 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	12.32	-.39	31.59	2.004	1.019	.498	-.557	-.585
2	.144	14.69	-.88	31.14	1.818	.899	.413	-.853	-.520
3	.344	16.15	-1.02	30.80	1.865	.921	.370	-.920	-.493
4	.694	17.27	-1.15	30.54	1.726	.999	.327	-.879	-.371
5	.994	17.75	-1.19	30.45	1.622	1.038	.283	-.881	-.289
6	1.394	18.10	-1.25	30.34	1.424	1.075	.240	-.795	-.201
7	1.794	18.31	-1.28	30.29	1.329	1.102	.206	-.728	-.155
8	2.194	18.52	-1.30	30.23	1.234	1.129	.173	-.660	-.110
9	2.594	18.70	-1.32	30.22	1.182	1.096	.152	-.587	-.085
10	2.994	18.76	-1.33	30.21	1.169	1.137	.129	-.625	-.061
11	3.494	18.94	-1.34	30.18	1.091	1.160	.112	-.576	-.047
12	3.994	18.96	-1.35	30.18	1.063	1.141	.097	-.511	-.034
13	4.494	19.08	-1.34	30.17	1.039	1.152	.077	-.519	-.022
14	4.994	19.16	-1.39	30.17	1.009	1.146	.076	-.461	-.015

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.205	-.690	+.1605	1.770	-.450	+.692	1.000
2	+.179	-.336	+.0478	1.690	-.429	+1.213	1.000
3	+.187	-.333	+.0627	1.526	-.386	+1.241	1.000
4	+.183	-.551	+.1183	1.262	-.315	+1.199	1.000
5	+.169	-.594	+.1292	1.058	-.261	+1.283	1.000
6	+.159	-.682	+.1447	.817	-.196	+1.202	1.000
7	+.136	-.600	+.1295	.614	-.141	+1.224	0.000
8	+.114	-.519	+.1142	.447	-.095	+1.229	1.000
9	+.094	-.480	+.0976	.316	-.058	+1.147	1.000
10	+.079	-.500	+.0976	.222	-.031	+1.095	1.000
11	+.069	-.345	+.0769	.156	-.010	+.537	1.000
12	+.058	-.328	+.0690	.148	-.004	+.236	1.000
13	+.039	-.139	+.0366	.196	-.012	+.831	1.000
14	+.035	-.160	+.0433	.302	-.035	+1.529	1.000

FILE NAME : IVT0627S4 **Station 4**

****

U = SUM(A(N) * Y^N)

A0= +1.6269E+01 A1= +1.8133E+00 A2= -4.3697E-01 A3= +3.8136E-02

Y	U	UC	% DIFF
.6940	17.2661	17.330	+.367
.9940	17.7500	17.677	-.412
1.3940	18.0959	18.051	-.250
1.7940	18.3071	18.336	+.156
2.1940	18.5183	18.547	+.152
2.5940	18.6981	18.698	-.002
2.9940	18.7619	18.804	+.226
3.4940	18.9408	18.897	-.234
3.9940	18.9622	18.970	+.042
4.4940	19.0808	19.054	-.141
4.9940	19.1569	19.176	+.101

****

T = SUM(A(N) * Y^N)

A0= +3.0800E+01 A1= -4.6176E-01 A2= +1.1575E-01 A3= -9.7542E-03

Y	T	TC	% DIFF
.6940	30.5377	30.532	-.017
.9940	30.4460	30.446	+.001
1.3940	30.3444	30.355	+.036
1.7940	30.2895	30.288	-.004
2.1940	30.2347	30.241	+.022
2.5940	30.2201	30.211	-.029
2.9940	30.2055	30.194	-.039
3.4940	30.1814	30.184	+.009
3.9940	30.1758	30.181	+.018
4.4940	30.1700	30.178	+.025
4.9940	30.1725	30.166	-.021

****

IVT0627SS **Station 5**

R = 97.000 [cm] Tw-Tinf = 3.940 [C] Upw = 17.70 [m/S]
Qwall = 210.8 [W/m^2]

N	Y [cm]	U [m/S]	V [m/S]	T [C]	u' [m/S]	v' [m/S]	t' [C]	u'v' [m2/S2]	u't' [m-C/S
1	.050	10.32	+.37	31.70	1.856	.906	.534	-.141	-.560
2	.182	14.72	-1.06	31.03	1.883	.918	.414	-.821	-.525
3	.482	16.70	-1.28	30.59	1.857	.927	.363	-.898	-.469
4	.782	17.38	-1.35	30.41	1.673	.947	.318	-.767	-.35
5	1.182	17.89	-1.40	30.28	1.556	1.031	.273	-.807	-.27
6	1.582	18.13	-1.40	30.21	1.434	1.096	.239	-.792	-.214
7	1.982	18.28	-1.43	30.19	1.311	1.099	.222	-.715	-.168
8	2.382	18.44	-1.44	30.14	1.285	1.131	.195	-.773	-.142
9	2.782	18.53	-1.48	30.13	1.226	1.174	.185	-.723	-.127
10	3.182	18.62	-1.46	30.12	1.149	1.182	.159	-.676	-.092
11	3.582	18.71	-1.48	30.09	1.101	1.133	.137	-.578	-.070
12	3.982	18.78	-1.50	30.07	1.063	1.180	.127	-.573	-.057
13	4.482	18.80	-1.52	30.05	1.001	1.131	.107	-.467	-.044
14	4.982	18.82	-1.43	30.07	.999	1.117	.095	-.454	-.033

N	v't' [m-C/S]	u'v'^2 [m3/S3]	v'^2t' [m2-C/S2]	dU/dy [1/S]	dT/dy [C/m]	Prt	GAMMA
1	+.152	-.256	+.0569	1.489	-.374	+.233	1.000
2	+.190	-.367	+.0826	1.398	-.350	+1.081	1.000
3	+.195	-.465	+.0992	1.201	-.300	+1.146	1.000
4	+.165	-.513	+.1144	1.021	-.253	+1.154	1.000
5	+.163	-.549	+.1121	.805	-.198	+1.219	1.000
6	+.156	-.534	+.1193	.618	-.150	+1.237	1.000
7	+.153	-.562	+.1305	.459	-.110	+1.115	1.000
8	+.140	-.646	+.1347	.329	-.077	+1.289	1.000
9	+.135	-.658	+.1467	.227	-.051	+1.205	1.000
10	+.117	-.564	+.1244	.153	-.033	+1.233	1.000
11	+.090	-.507	+.1023	.107	-.022	+1.295	1.000
12	+.093	-.407	+.1089	.090	-.018	+1.252	1.000
13	+.071	-.346	+.0803	.109	-.024	+1.480	1.000
14	+.061	-.311	+.0785	.172	-.042	+1.813	1.000

FILE NAME : IVT0627S5 Station 5

****

U = SUM(A(N) * Y^N)

A0= +1.6452E+01 A1= +1.5245E+00 A2= -3.5658E-01 A3= +2.9551E-02

Y	U	UC	% DIFF
.7820	17.3761	17.440	+.366
1.1820	17.8917	17.804	-.488
1.5820	18.1269	18.088	-.214
1.9820	18.2762	18.303	+.138
2.3820	18.4363	18.459	+.125
2.7820	18.5322	18.569	+.221
3.1820	18.6199	18.644	+.131
3.5820	18.7076	18.695	-.056
3.9820	18.7768	18.734	-.227
4.4820	18.8027	18.782	-.109
4.9820	18.8240	18.850	+.142

****

T = SUM(A(N) * Y^N)

A0= +3.0638E+01 A1= -3.8280E-01 A2= +9.1846E-02 A3= -7.7143E-03

Y	T	TC	% DIFF
.7820	30.4082	30.391	-.057
1.1820	30.2842	30.301	+.055
1.5820	30.2088	30.231	+.075
1.9820	30.1911	30.180	-.038
2.3820	30.1427	30.143	+0.000
2.7820	30.1312	30.118	-.046
3.1820	30.1151	30.101	-.047
3.5820	30.0894	30.090	+.003
3.9820	30.0720	30.083	+.035
4.4820	30.0527	30.072	+.066
4.9820	30.0707	30.056	-.048

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16. Abstract

An experimental investigation of the transition process on flat-plate and concave curved-wall boundary layers for various free-stream turbulence levels was performed. Where possible, sampling according to the intermittency function was made. Such sampling allowed segregation of the signal into two types of behavior—laminar-like and turbulent-like. Results show that for transition on a flat-plate, the two forms of boundary layer behavior, identified as laminar-like and turbulent-like, cannot be thought of as separate Blasius and fully-turbulent profiles, respectively. Thus, simple transition models in which the desired quantity is assumed to be an average, weighted on intermittency, of the theoretical laminar and fully turbulent values is not expected to be successful. Deviation of the flow identified as laminar-like from theoretical laminar behavior is shown to be due to recovery after the passage of a turbulent spot, while deviation of the flow identified as turbulent-like from the fully-turbulent values is thought to be due to incomplete establishment of the fully-turbulent power spectral distribution. Turbulent Prandtl numbers for the transitional flow, computed from measured shear stress, turbulent heat flux and mean velocity and temperature profiles, were less than unity. For the curved-wall case with low free-stream turbulence intensity, the existence of Görtler vortices on the concave wall within both laminar and turbulent flows was established using liquid crystal visualization and spanwise velocity and temperature traverses. Transition was found to occur via a vortex breakdown mode. The vortex wavelength was quite irregular in both the laminar and turbulent flows, but the vortices were stable in time and space. The upwash was found to be more unstable, with higher levels of u' and $u'v'$, and lower skin friction coefficients and shape factors. Turbulent Prandtl numbers, measured using a triple-wire probe, were found to be near unity for all post-transitional profiles, indicating no gross violation of Reynolds analogy. No evidence of streamwise vortices was seen in the high turbulence intensity case. It is not known whether this is due to the high eddy viscosity over the entire flow which reduces the turbulent Görtler number to stable values and causes the vortices to disappear, or whether it is due to an unstable vortex structure. Predictions based on two-dimensional modelling of the flow over a concave wall with high free-stream turbulence levels, as on the pressure surface of a turbine blade, would seem to be adequate. High levels of free-stream turbulence superimposed on a free-stream velocity gradient (which occurs within curved channels) was found to cause a cross-stream transport of momentum within the "potential core" of the flow. The total pressure within the "potential core" can thus rise to levels higher than that which occurs at the inlet to the test section. Documentation is presented in two volumes. Volume I contains the text of the report including figures and supporting appendices. Volume II contains data reduction program listings and tabulated data.

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